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| | | | | 30 | | | | | 55 | | | | | | | | | |
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| His | Ile | Met | Asp | Glu | Ala | . Arg | Arg | Gly | ьуs | гÀг | 1111 | . vaı | . A. | а , | 0111 | | - | |
| | | | 45 | i | | | | 50 | | | | | 5 | J | | | | |
| | | | | | | | | | | | | | | | | | | 424 |
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| | | | | | | | | | | | | | | | | | | |
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| | 1 - | , | | | | | | | | | | | | | | | | |
| | | | | | 2 20 | + ~+ | α aa: | t tg <u>c</u> | r ccc | ate | c qa | a cc | a ga | at | gaç | gc | ac | 520 |
| ggt | acq | gaaa - | a ct | L GL | a ac | - Va | ו אפי | n Trp | p Pro | o Tl | e Gl | u Pr | o A: | spí | Gli | ٤ | lis | |
| | | г Гу: | s Le | u va | | | T VO | | | 10 | | | | - | | 1 | .05 | |
| 90 |) | | | | 9 | 5 | | | | 10 | • | | | | | | | |
| | | | | | | | | | | | L ~~ | - 41 | ~ 3 | + c | gai | a c | rt c | 568 |
| tto | aa | a gc | g gg | c ga | a gt | g aa | a tt | t gg¹ | t tg | c ga | L dd | a ya | .са | 1. | C1 | 9 1 | . 611 | |
| Phe | e Ly | s Al | a Gl | y Gl | u Va | l Ly | s Ph | e Gl | | | ь гу | s As | рī | тe | 12 | u , | Jeu | |
| | | | | 11 | .0 | | | | 11 | 5 | | | | | 12 | U | | |
| | | | | | | | | | | | | | | | | | | C1 C |
| aa | t gc | a gg | с аа | ıa ga | ıa gt | a ac | c ga | a ct | t ga | g gt | t ac | ct aa | at g | aa | gg | g | cct | 616 |
| As | n Al | a Gl | у Гу | s Gl | u Va | al Th | ır Gl | u Le | u Gl | u Va | al Th | nr As | sn G | lu | Gl | У | Pro | |
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| 1., | | T.e | יו ווי | ic Va | al G | Lv Se | er Hi | is Ph | e Hi | s Ph | ne Pl | he G | lu F | Ala | As | n | Lys | |
| ъÀ | . se | | | ۷ د د | 0. | | 14 | | | | | | 50 | | | | | |
| | | 14 | ŧU | | | | _ | | | | | | | | | | | |
| | | | | • | | | | | ·~ +- | at or | იი გ | aa c | ac (| cta | ı qa | at | att | 712 |
| gc | a ct | ca aa | aa ti | tc g | at C | gt g | ad di | aa go | | 9 | , u | | ` - ر | | ٠ ر | | | |

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| | | | | | gta Val | | | | | | | | | | | 953 |
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| | | | | | | | | | | | | Thr | | | tta Leu | 1097 |
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| Ala | Gly | Ala | Ile | Gly | Phe | Lys | Leu | His | Glu | Asp | Trp | Gly | Thr | Thr | Pro | |
| | 440 | 1 | | | | 445 | ì | | | | 450 | ı | | | | |
| | | | | | | | | | | | • | | | | | |
| agt | gcg | ato | gat | cac | : tgc | ttg | ago | gtç | gca | gat | gaa | tac | gat | gtg | caa | 1625 |

| Ser | Ala | Ile | Asp | His | Cys | Leu | Ser | Val | Ala | Asp | Glu | Tyr | Asp | Val | Gln | |
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| Thr | Leu | Asn | Ala | Met | Asn | Gly | Arg | Ala | Ile | His | Ala | Tyr | His | Ile | Glu | |
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| | | | | | gtg | | | | | | | | | | | 2201 |
| Glu | Tyr | TTE | _ | Ser | Val | Glu | Glu | _ | гàг | TTE | Ата | Asp | | val | val | |
| | | | 650 | | | | | 655 | | | | | 660 | | | |
| | | | | | | | | | | | | | | | | |
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| Trp | Asn | Pro | Ala | Phe | Phe | Gly | Val | Lys | Pro | Lys | Ile | Val | Ile | Lys | Gly | |
| | | 665 | | | | | 670 | | | | | 675 | | | | |
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| Aid | гÀг | Pne | Asp | | Ser | ile | inr | Pne | | Ser | ьуѕ | vaı | АТА | | GIU | |
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Arg Tyr Thr Phe Phe

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Leu Asp Leu Val Ile Thr Asn Ala Met Ile Ile Asp Tyr Thr Gly Ile
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90

95

Lys Ala Gly Asn Lys Asp Met Gln Asp Gly Val Ser Pro His Met Val
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Gly Pro Val Asp Gly Thr Asn Ala Thr Thr Ile Thr Pro Gly Lys Trp 165 170 175

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| Gly | Phe | Ļeu 195 | Gly | Lys | Gly | Asn | Ser 200 | Ser | Ser | Lys | Lys | Gln 205 | Leu | Val | Glu |
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3.80

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                                  25
                                                      30
ccc gaa gcc att gcc tac att agt gcc cat att atg gac gag gcg cgc
                                                                    144
Pro Glu Ala Ile Ala Tyr Ile Ser Ala His Ile Met Asp Glu Ala Arg
         35
                                                  45
                              40
                                                                   192
cgt ggc aaa aaa acc gtt gct gaa ctt atg gaa gaa tgt atg cac ttt
Arg Gly Lys Lys Thr Val Ala Glu Leu Met Glu Clys Met His Phe
     50
                         55
                                              60
ttg aaa aaa gat gag gtg atg ccc ggt gtg ggg aat atg gtc cct gat
Leu Lys Lys Asp Glu Val Met Pro Gly Val Gly Asn Met Val Pro Asp
 65
                     70
                                          75
ttg ggc gta gaa gcc act ttc ccc gat ggc acc aaa ctc gta acc gtg
                                                                   288
Leu Gly Val Glu Ala Thr Phe Pro Asp Gly Thr Lys Leu Val Thr Val
                 85
                                      90
```

| aat | tgg | ccc | att | gaa | cct | gat | gaa | cac | ttt | aaa | gcc | ggt | gaa | gtg | aaa | 336 |
|--------------|-----|-------|-----|------|------|------|------|-----|--------|-------|--------------|-------|-------|-------|----------------|-------|
| Asn | Trp | Pro | Ile | Glu | Pro | Asp | Glu | His | Phe | Lys | Ala | Gly | Glu | Val | Lys | |
| | | | 100 | | | | | 105 | | | | | 110 | | | |
| | | | | | | | | | | | | | | | | |
| | | | gat | | | | | | | | | | | | | 384 |
| Phe | Gly | Cys | Asp | Lys | Asp | Ile | Glu | Leu | Asn | Ala | Gly | Lys | Glu | Val | Thr | |
| | | 115 | | | | | 120 | | | | | 125 | | | | |
| | | | | | | | | | | | | | | | | 420 |
| _ | | | gtt | | | | | | | | | | | | | 432 |
| Glu | Leu | Glu | Val | Thr | Asn | | Gly | Pro | Lys | Ser | | His | Val | GIA | Ser | |
| | 130 | | | | | 135 | | | | | 140 | | | | | |
| | | | | | | | | | | ** | | ++- | ant. | caa | as a | 480 |
| | | | ttc | | | | | | | | | | | | | 400 |
| | Phe | HIS | Phe | Pne | | 1111 | ASII | гÃ2 | Ата | 155 | пуз | rne | пор | 7119 | 160 | |
| 145 | | | | | 150 | | | | | 133 | | | | | 100 | |
| 2 2 2 | ~~c | + > + | ggc | 222 | cac | cta | gat | att | CCC | tct | aac | aac | acq | cta | cgc | 528 |
| | | | | | | | | | | | | | | | Arg | |
| пуз | AIG | ıyı | Ory | 165 | 1129 | 200 | | | 170 | | | | | 175 | | |
| | | | | 100 | | | | | | | | | | | | |
| att | aaa | σca | ααa | caa | acc | cqt | aaa | gtg | cag | tta | ato | cct | ctt | ggc | ggt | 576 |
| | | | | | | | | | | | | | | | gly | |
| | - | | 180 | | | | | 185 | | | | | 190 | | | |
| | | | | | | | | | | - | | | | | | |
| agt | aaa | aaa | gtg | att | ggc | atg | aac | ggg | ctt | gtg | aat | aat | att | gcg | g gac | 624 |
| Ser | Lys | Lys | Val | Ile | Gly | Met | Asn | Gly | Leu | . Val | Asr | Asr | ı Ile | . Ala | a Asp | |
| | | 195 | | | | | 200 | | | | | 205 | 5 | | | |
| | | | | | | | | | | | | | | | | |
| _ | | | | | | | | | | | | | | | a ttc | 672 |
| Glu | Arg | His | Lys | His | Lys | Ala | Let | Asp | Lys | Ala | Lys | s Sei | His | Gly | y Phe | |
| | 210 | l | | | | 215 | i | | | | 220 |) | | | | |
| | | | | | | | | | | | | | | | | 701 |
| | | | gga | gact | | | | | | | | | | | | 721 |
| | Lys | ; | | | | Met | Lys | | Lys | Lys | Gln | Glu | | Val | Asn | |
| 225 | | | | | | | | 230 | | | | | 235 | | | |
| | . 4 | | | | | | | | . ـهـم | | , ##. | . ~~ | . ~~ | - 20 | c cat | 769 |
| | | | | | | | | | | | | | | | c gat r Asp | , 0,5 |

| ctt | tgg | gca | gaa | gta | gaa | cat | gac | tat | acc | act | tat | ggc | gaa | gag | ctc | 817 |
|-------|------|-----|----------|-----|------|----------|------|------|--------------|------|-------|------------------|------------|-----|------|------|
| Leu | Trp | Ala | Glu | Val | Glu | His | Asp | Tyr | Thr | Thr | Tyr | Gly | Glu | Glu | Leu | |
| | 255 | | | | | 260 | | | | | 265 | | | | | |
| | | | | | : 5 | <u> </u> | | | | | | | | | | |
| aaa | ttt | ggc | gcg | ggt | aaa | act | atc | cgt | gag | ggt | atg | ggt | cag | agc | aat | 865 |
| Ĺуs | Phe | Gly | Ala | Gly | Lys | Thr | Ile | Arg | Glu | Gly | Met | Gly | Gln | Ser | Asn | |
| 270 | | | | | 275 | | | | | 280 | | | | | 285 | |
| | | | | | | | | | | | | | | | | |
| agc | cca | gat | gaa | aac | acc | tta | gat | tta | gtg | atc | acc | aac | gcg | atg | att | 913 |
| Ser | Pro | Asp | Glu | Asn | Thr | Leu | Asp | Leu | Val | Ile | Thr | Asn | Ala | Met | Ile | |
| | | | | 290 | | | | | 295 | | | | | 300 | | |
| | | | | | | | | | | | | | | | | |
| atc | gac | tac | acc | ggg | att | tat | aaa | gcc | gac | att | ggt | att | aaa | aat | ggc | 961 |
| | | | | | | | | | | | | | | Asn | | |
| | - | - | 305 | - | | _ | _ | 310 | | | | | 315 | | | |
| | | | | | | | | | | | | | | | | |
| aaa | atc | cat | ggt | att | ggc | aag | gcg | ggg | aac | aaa | gac | atg | caa | gat | ggc | 1009 |
| | | | - : | | | | | | | | | | | Asp | | |
| - | | 320 | _ | | _ | | 325 | - | | - | _ | 330 | | | | |
| | | | | | | | | | | | | | | | | |
| qta | agc | cct | cat | atσ | atc | ata | aat | ata | aac | aca | gaa | qca | cta | gca | ggg | 1057 |
| | _ | | | _ | _ | | | | | | | | | Ala | | |
| | 335 | | -, | | | 340 | 3 | | - | | 345 | | | | - | |
| | | | | | | | | | | | | | | | | |
| σаа | aat | atα | att | att | acc | act | aaa | aaa | atc | gat | t.ca | cac | acc | cac | ttc | 1105 |
| | | | | | | | | | | | | | | His | | |
| 350 | OL j | | 110 | 110 | 355 | | 0_1 | 021 | | 360 | | | | | 365 | |
| | | | | | 300 | | | | | | | | | | | |
| ctc | tct | ccc | Caa | caa | ttc | cct | acc | act | cta | acc | aat | aat | att | aca | acc | 1153 |
| | | | | | | | | | | | | | | Thr | | |
| Deu | SCI | 110 | G11 | 370 | 1116 | 110 | 1111 | 1114 | 375 | 7114 | 11511 | O _L y | | 380 | | |
| | | | | 370 | | | | | 313 | | | | | 300 | | |
| a+~ | +++ | | A. A. A. | ~~- | 205 | ~~+ | 000 | a+- | ~ - + | ~~~ | 200 | a a t | aca | 200 | 200 | 1201 |
| | | | | | | | | | | | | | | acc | | 1201 |
| rie C | rne | сту | _ | стХ | inr | етХ | PIO | | Asp | етй | | ASII | | Thr | 1117 | |
| | | | 385 | | | | | 390 | | | | | 395 | | | |

| atc | act | ccg | ggc | aaa | tgg | aac | ttg | cac | cgc | atg | ttg | cgc | gca | gct | gaa | 1249 |
|--|---------------------------------|--|------------------------------------|--------------------------|---|--|--|--|---------------------------------|--|---|--|--|---------------------------------|---------------------------------|--------------|
| Ile | Thr | Pro | Gly | Lys | Trp | Asn | Leu | His | Arg | Met | Leu | Arg | Ala | Ala | Glu | |
| | | 400 | | | | | 405 | | | | | 410 | | | | |
| | | | | | | | | | | | | | | | | |
| gag | tat | tct | atg | aat | gtg | ggc | ttt | ttg | ggc | aaa | ggc | aat | agc | tcc | agt | 1297 |
| | | | | | | Gly | | | | | | | | | - | |
| | 415 | | | | | 420 | | | - | - | 425 | | | | | |
| | | | | | | | | | | | | | | | | |
| aaa | aaa | caa | ctc | gta | gaa | caa | qta | gaa | aca | aac | aca | att | aac | ttt | aaa | 1345 |
| | | | | | | Gln | | | | | | | | | | 1010 |
| 430 | 2 | | | | 435 | | | | | 440 | | | 0-1 | | 445 | |
| | | | | | | | | | | | | | | | 113 | |
| tta | cat | gaa | gac | taa | aac | aca | aca | сса | agt | aca | atc | αat | cac | tac | tta | 1393 |
| | | | | | | Thr | | | | | | | | _ | - | 1373 |
| 200 | 0 | or u | пор | 450 | O _T y | 1111 | **** | 110 | 455 | 711LU | 110 | пор | 1113 | 460 | neu | |
| | | | | 100 | | | | | 100 | | | | | 400 | | |
| auc | ota | aca | cat | maa. | tac | gat | ata | Caa | at t | + a+ | ato | C2C | 200 | ~a+ | 200 | 1 / / 1 |
| | | | | | | Asp | | | | | | | | _ | - | 1441 |
| 261 | Val | AIG | 465 | Giu | ıyı | ASP | vaı | 470 | val | Cys | TTE | піз | | Asp | Inr | |
| | | | | | | | | | | | | | | | | |
| | | | 400 | | | | | 4,0 | | | | | 475 | : | | |
| ~+ ^ | - | ~~~ | | | . | | | | | | 4 | | | : | | 1.00 |
| | | | gca | | | gta | | gac | | | | | atg | | | 1489 |
| | | Glu | gca | | | gta Val | Asp | gac | | | | Ala | atg | | | 1489 |
| | | | gca | | | | | gac | | | | | atg | | | 1489 |
| Val | Asn | Glu 480 | gca Ala | Gly | Tyr | Val | Asp 485 | gac Asp | Thr | Leu ." | Asn | Ala 490 | atg Met | Asn | Gly | |
| Val cgc | Asn gcc | Glu 480 atc | gca Ala | Gly | Tyr | Val | Asp 485 att | gac Asp | Thr gga | Leu "" gcg | Asn ggc | Ala 490 gga | atg Met gga | Asn | Gly | 1489 1537 |
| Val cgc | Asn gcc Ala | Glu 480 atc | gca Ala | Gly | Tyr tac Tyr | Val cac His | Asp 485 att | gac Asp | Thr gga | Leu "" gcg | Asn ggc Gly | Ala 490 gga | atg Met gga | Asn | Gly | |
| Val cgc | Asn gcc | Glu 480 atc | gca Ala | Gly | Tyr tac Tyr | Val | Asp 485 att | gac Asp | Thr gga | Leu "" gcg | Asn ggc | Ala 490 gga | atg Met gga | Asn | Gly | |
| Val cgc Arg | gcc Ala 495 | Glu 480 atc Ile | gca Ala cat His | Gly gcc Ala | Tyr tac Tyr | Cac His 500 | Asp 485 att Ile | gac Asp · gag Glu | Thr gga Gly | Leu gcg Ala | ggc Gly 505 | Ala 490 gga Gly | atg Met gga Gly | Asn cac His | Gly tca Ser | |
| val cgc Arg | gcc Ala 495 gat | Glu 480 atc Ile gtt | gca Ala cat His | gcc Ala | Tyr tac Tyr | Cac His 500 | Asp 485 att Ile ggc | gac Asp gag Glu | Thr gga Gly | Leu gcg Ala | Asn ggc Gly 505 | Ala 490 gga Gly | atg Met gga Gly | Asn cac His | Gly tca Ser | |
| cgc Arg | gcc Ala 495 gat | Glu 480 atc Ile gtt | gca Ala cat His | gcc Ala | Tyr tac Tyr | Cac His 500 | Asp 485 att Ile ggc | gac Asp gag Glu | Thr gga Gly | Leu gcg Ala | Asn ggc Gly 505 | Ala 490 gga Gly | atg Met gga Gly | Asn cac His | Gly tca Ser | 1537 |
| val cgc Arg | gcc Ala 495 gat | Glu 480 atc Ile gtt | gca Ala cat His | gcc Ala | Tyr tac Tyr | Cac His 500 | Asp 485 att Ile ggc | gac Asp gag Glu | Thr gga Gly | Leu gcg Ala | Asn ggc Gly 505 | Ala 490 gga Gly | atg Met gga Gly | Asn cac His | Gly tca Ser | 1537 |
| cgc Arg | gcc Ala 495 gat | Glu 480 atc Ile gtt | gca Ala cat His | gcc Ala | Tyr tac Tyr atg Met | Cac His 500 | Asp 485 att Ile ggc | gac Asp gag Glu | Thr gga Gly | Leu gcg Ala aat Asn | Asn ggc Gly 505 | Ala 490 gga Gly | atg Met gga Gly | Asn cac His | Gly tca Ser tcc | 1537 |
| cgc Arg cct Pro 510 | gcc Ala 495 gat Asp | Glu 480 atc Ile gtt Val | gca Ala cat His atc Ile | gcc Ala acc Thr | tac Tyr atg Met 515 | Cac His 500 gca Ala | Asp 485 att Ile ggc Gly | gac Asp gag Glu gag Glu | Thr gga Gly ctc Leu aat | Leu gcg Ala aat Asn 520 | ggc Gly 505 att Ile | Ala 490 gga Gly cta Leu | atg Met gga Gly ccc Pro | Asn cac His tcc Ser | tca Ser tcc Ser 525 | 1537 |
| cgc Arg cct Pro 510 | gcc Ala 495 gat Asp | Glu 480 atc Ile gtt Val | gca Ala cat His atc Ile | gcc Ala acc Thr | tac Tyr atg Met 515 | Val cac His 500 gca Ala | Asp 485 att Ile ggc Gly | gac Asp gag Glu gag Glu | Thr gga Gly ctc Leu aat | Leu gcg Ala aat Asn 520 | ggc Gly 505 att Ile | Ala 490 gga Gly cta Leu | atg Met gga Gly ccc Pro | Asn cac His tcc Ser | tca Ser tcc Ser 525 | 1537 1585 |
| cgc Arg cct Pro 510 | gcc Ala 495 gat Asp | Glu 480 atc Ile gtt Val | gca Ala cat His atc Ile | gcc Ala acc Thr | tac Tyr atg Met 515 | Cac His 500 gca Ala | Asp 485 att Ile ggc Gly | gac Asp gag Glu gag Glu | Thr gga Gly ctc Leu aat | Leu gcg Ala aat Asn 520 | ggc Gly 505 att Ile | Ala 490 gga Gly cta Leu | atg Met gga Gly ccc Pro | Asn cac His tcc Ser | tca Ser tcc Ser 525 | 1537 1585 |
| cgc Arg cct Pro 510 | gcc Ala 495 gat Asp | Glu 480 atc Ile gtt Val | gca Ala cat His atc Ile | gcc Ala acc Thr | tac Tyr atg Met 515 | Cac His 500 gca Ala | Asp 485 att Ile ggc Gly | gac Asp gag Glu gag Glu | Thr gga Gly ctc Leu aat Asn | Leu gcg Ala aat Asn 520 | ggc Gly 505 att Ile | Ala 490 gga Gly cta Leu | atg Met gga Gly ccc Pro | Asn cac His tcc Ser | tca Ser tcc Ser 525 | 1537 1585 |
| cgc Arg cct Pro 510 acc | gcc Ala 495 gat Asp | Glu 480 atc Ile gtt Val ccc Pro | gca Ala cat His atc Ile act Thr | gcc Ala acc Thr | tac Tyr atg Met 515 ccc Pro | Cac His 500 gca Ala | Asp 485 att Ile ggc Gly acc Thr | gac Asp gag Glu gag Glu att Ile | Thr gga Gly ctc Leu aat Asn 535 | Leu gcg Ala aat Asn 520 acg Thr | ggc Gly 505 att Ile gtt Val | Ala 490 gga Gly cta Leu gca Ala | atg Met gga Gly ccc Pro | Asn cac His tcc Ser cac His | Cly tca Ser tcc Ser 525 tta Leu | 1537 1585 |



| a+ a | cad | +++ | tcc | caa | agc | cqt . | atc | cgc · | ccc | ggc | tct | att | gcc | gct | ga | ıa | 1729 |
|------------|------|-------|-------|-------|-------|-------|-------|-------|----------|-------|--------------|-------|----------|--------------|----------|-------|------|
| 100 | Cay | Phe | Ser | Gln | Ser | Arq | Ile | Arg | Pro | Gly | Ser | Ile | Ala | Ala | G) | u | |
| ьeu | 01 | 560 | | | | | 565 | | | | | 570 | | | | | |
| | | 300 | | | 5 | - | | | | | | | | | | | |
| ast. | ata | ctc | cat | gat | att | ggc | gtg | atc | gcg | atg | aca | agc | tcg | gat | to | cg | 1777 |
| yac Aen | Val | Leu | His | Asp | Ile | Gly | Val | Ile | Ala | Met | Thr | Ser | Ser | Asp | S | er | |
| vob | 575 | 200 | | | | 580 | | | | | 585 | | | | | | |
| | 3.0 | | | | | | | | | | | | | | | | |
| саа | aca | atα | ggg | cqc | gct | ggg | gaa | gtg | att | cct | aga | act | tgg | caa | a | ct | 1825 |
| Gln | Ala | Met | Gly | Arg | Ala | Gly | Glu | Val | Ile | Pro | Arg | Thr | Trp | Glr | Т | hr | |
| 590 | | | _ | _ | 595 | | | | | 600 | | | | | 6 | 05 | |
| | | | | | | | | | | | | | | | | | |
| qca | gac | aag | aat | aaa | aaa | gaa | ttt | ggt | aag | ctt | cct | gaa | gat | : ggt | t g | ca | 1873 |
| Ala | Asp | Lys | : Asn | Lys | Lys | Glu | Phe | Gly | Lys | Leu | Pro | Glu | ı Ası | Gl | y A | la | |
| | | | | 610 | | | | | 615 | | | | | 620 | 0 | | |
| | | | | | | | | | | | | | | | | | 1001 |
| gat | aat | gad | aac | ttc | cgc | atc | aaa | cgc | tat | atc | tco | aaa | a ta | c ac | c a | itt | 1921 |
| Asp | Asr | n Asp | Asr. | Phe | Arg | Ile | Lys | Arg | Tyr | Ile | Ser | Lys | з Ту | r Th | r] | lle | |
| | | | 625 | | | | | 630 | | | | | 63 | 5 | | | |
| | | • | | | | | | | | | | | | | | | 1000 |
| aat | . cc | c gc | t ttç | g acc | c cat | ggc | gtg | ago | gag | r tat | ato | c gg | c to | t gt | g (| gaa | 1969 |
| Asr | n Pr | o Al | a Lei | ı Thi | r His | : Gly | Val | . Ser | Glu | ı Týı | : Il | e Gl | y Se | r Va | ı T | JU | |
| | | 64 | 0 | | | | 645 | 5 | | | | 65 | 0 | | | | |
| | | | | | | | | | | | | | | | | | 2017 |
| ga | g gg | c aa | g at | c gc | c gad | ttg | gt | ggt | g tg | g aat | t cc | t go | t tt | C tt | τ | ggı | 2017 |
| Gl | u Gl | у Lу | s Il | e Al | a Asp | . Lev | ı Val | l Val | l Trp |) Ası | | | a Pr | ie Pr | ne | СТУ | |
| | 65 | 5 | | | | 660 |) | | | | 66 | 5 | | | | | |
| | | | | | | | | | | | | | | -a + | ~+ | ~ a a | 2065 |
| gt | a aa | a co | c aa | a at | c gt | g at | c aa | a gg | c gg | t at | g gt | g gt | ים ני | 20 0 | or | Glu | 2003 |
| Va | l Ly | s Pr | o Ly | s Il | e Va | 1 Il | e Ly | s Gl | y Gl | | | IT V | il Pi | .ie 5 | CI | 685 | |
| 67 | 0 | | | | 67 | 5 | | | | 68 | U | | | | | 000 | |
| | | | | | | | | | | | L = - | | ~~ ~ | ++ + | a+ | tac | 2113 |
| at | g g | gc ga | at to | t aa | c gc | g tc | t gt | g cc | c ac | a cc | t Ca | ag Co | -y y | טני שות ה | uc | Tur | |
| Me | t G | ly A | sp Se | er As | n Al | a Se | r Va | l Pr | | | O G. | LII P | LO V | a1 1 7 | 00 Ar | - Y - | |
| | | | | 69 | 90 | | | | 69 | 5 | | | | ′ | JU | | |

| cg | С | gaa | atg | ttt | ggg | cat | cac | ggc | aag | gcg | aaa | ttt | gac | acc | agc | atc | 2161 |
|----|-----|------|------|------|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| Ar | g | Glu | Met | Phe | Gly | His | His | Gly | Lys | Ala | Lys | Phe | Asp | Thr | Ser | Ile | |
| | | | | 705 | | | | | 710 | | | | | 715 | | | |
| | | | | | | | | | | | | | | | | | |
| ac | t | ttt | gtt | tcc | aaa | gtc | gcc | tat | gaa | aat | ggc | gtg | aaa | gaa | aaa | cta | 2209 |
| Th | r | Phe | Val | Ser | Lys | Val | Ala | Tyr | Glu | Asn | Gly | Val | Lys | Glu | Lys | Leu | |
| | | | 720 | | | | | 725 | | | | | 730 | | | | |
| | | | | | | | | | | | | | | | | | • |
| gg | ıc | tta | gag | cgc | aag | gtg | cta | ccc | gtg | aaa | aac | tgc | cgc | aac | atc | act | 2257 |
| Gl | -у | Leu | Glu | Arg | Lys | Val | Leu | Pro | Val | Lys | Asn | Cys | Arg | Asn | Ile | Thr | |
| | | 735 | | | | | 740 | | | | | 745 | | | | | |
| | | | | | | | | | | | | | | | | | |
| aa | ıg | aaa | gac | ttc | aaa | ttc | aac | aac | aag | acg | gcg | cat | atc | act | gtc | gat | 2305 |
| Ly | /S | Lys | Asp | Phe | Lys | Phe | Asn | Asn | Lys | Thr | Ala | His | Ile | Thr | Val | Asp | |
| 75 | 50 | | | | | 755 | | | | | 760 | | | | | 765 | |
| | | | | | | | | | | | | | | | | | |
| CC | ct | aaa | acc | ttc | gag | gtc | ttt | gta | gat | ggc | aaa | ctc | tgc | acc | tct | aaa | 2353 |
| Pı | 0 | Lys | Thr | Phe | Glu | Val | Phe | Val | Asp | Gly | Lys | Leu | Cys | Thr | Ser | Lys | |
| | | | | | 770 | | | | | 775 | | | | | 780 | | |
| | | | | | | | | | | | | | | | | | |
| C | cc | gcc | tct | gaa | gtg | cct | cta | gcc | caa | cgc | tac | act | ttc | ttc | tag | | 2398 |
| Pı | ro | Ala | Ser | Glu | Val | Pro | Leu | Ala | Gln | Arg | Tyr | Thr | Phe | Phe | | | |
| | | | | 785 | | | | | 790 | | | | | 795 | | | |
| | | | | | | | | | | | - | | | | | | |
| g | cac | caat | | • | | | | | | | | | • | | | | 2405 |
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| <: | 210 |)> 5 | | | | | | | | | | | | | | | |
| <: | 21: | 1> 2 | 26 | | | | | | | | | | | | | | |
| < | 212 | 2> P | RT | | | | | | | | | | | | | | |
| <. | 21: | 3> H | elic | obac | ter | feli | s | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| < | 400 | 0> 5 | ı | | | | | | | | | | | | | | • |
| V | al | Lys | Leu | Thr | Pro | Lys | Glu | Gln | Glu | Lys | Phe | Leu | Leu | Tyr | Tyr | Ala | |
| | 1 | | | | 5 | | | | | 10 | | | | | 15 | i | |
| | | | | | | | | | | | | | | | | | |
| G | ly | Glu | val | Ala | Arg | Lys | Arg | Lys | Ala | Glu | Gly | Leu | Lys | Leu | Asn | Gln | |
| | | | | 20 |) | | | | 25 |) | | | | 30 | ı | | |
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Pro Glu Ala Ile Ala Tyr Ile Ser Ala His Ile Met Asp Glu Ala Arg .35 40 45

Arg Gly Lys Lys Thr Val Ala Glu Leu Met Glu Glu Cys Met His Phe 50 55 60

Leu Lys Lys Asp Glu Val Met Pro Gly Val Gly Asn Met Val Pro Asp
65 70 75 80

Leu Gly Val Glu Ala Thr Phe Pro Asp Gly Thr Lys Leu Val Thr Val

Asn Trp Pro Ile Glu Pro Asp Glu His Phe Lys Ala Gly Glu Val Lys
100 105 110

Phe Gly Cys Asp Lys Asp Ile Glu Leu Asn Ala Gly Lys Glu Val Thr
115 120 125

Glu Leu Glu Val Thr Asn Glu Gly Pro Lys Ser Leu His Val Gly Ser 130 135 140

His Phe His Phe Phe Glu Thr Asn Lys Ala Leu Lys Phe Asp Arg Glu 145 150 155 160

Lys Ala Tyr Gly Lys Arg Leu Asp Ile Pro Ser Gly Asn Thr Leu Arg 165 170 175

Ile Gly Ala Gly Gln Thr Arg Lys Val Gln Leu Ile Pro Leu Gly Gly
180 185 190

Ser Lys Lys Val Ile Gly Met Asn Gly Leu Val Asn Asn Ile Ala Asp 195 200 205

Glu Arg His Lys His Lys Ala Leu Asp Lys Ala Lys Ser His Gly Phe 210 215 220

Ile Lys

<210> 6

<211> 568

<212> PRT

<213> Helicobacter felis

<400> 6

Met Lys Met Lys Lys Gln Glu Tyr Val Asn Thr Tyr Gly Pro Thr Thr

1 5 10 15

Gly Asp Lys Val Arg Leu Gly Asp Thr Asp Leu Trp Ala Glu Val Glu
20 25 30

His Asp Tyr Thr Thr Tyr Gly Glu Glu Leu Lys Phe Gly Ala Gly Lys
35 40 45

Thr Ile Arg Glu Gly Met Gly Gln Ser Asn Ser Pro Asp Glu Asn Thr
50 55 60

Leu Asp Leu Val Ile Thr Asn Ala Met Ile Ile Asp Tyr Thr Gly Ile
65 70 75 80

Tyr Lys Ala Asp Ile Gly Ile Lys Asn Gly Lys Ile His Gly Ile Gly
85 90 95

Lys Ala Gly Asn Lys Asp Met Gln Asp Gly Val Ser Pro His Met Val 100 105 110

Val Gly Val Gly Thr Glu Ala Leu Ala Gly Glu Gly Met Ile Ile Thr 115 120 125

Ala Gly Gly Ile Asp Ser His Thr His Phe Leu Ser Pro Gln Gln Phe 130 135 140

Pro Thr Ala Leu Ala Asn Gly Val Thr Thr Met Phe Gly Gly Gly Thr 145 150 155 160

Gly Pro Val Asp Gly Thr Asn Ala Thr Thr Ile Thr Pro Gly Lys Trp . 165 170 175

Asn Leu His Arg Met Leu Arg Ala Ala Glu Glu Tyr Ser Met Asn Val

Gly Phe Leu Gly Lys Gly Asn Ser Ser Ser Lys Lys Gln Leu Val Glu 195 200 205

Gln Val Glu Ala Gly Ala Ile Gly Phe Lys Leu His Glu Asp Trp Gly 210 215 220

Thr Thr Pro Ser Ala Ile Asp His Cys Leu Ser Val Ala Asp Glu Tyr 225 230 235 240

Asp Val Gln Val Cys Ile His Thr Asp Thr Val Asn Glu Ala Gly Tyr 245 250 255

Val Asp Asp Thr Leu Asn Ala Met Asn Gly Arg Ala Ile His Ala Tyr 260 265 270

His Ile Glu Gly Ala Gly Gly Gly His Ser Pro Asp Val Ile Thr Met 275 280 285

Ala Gly Glu Leu Asn Ile Leu Pro Ser Ser Thr Thr Pro Thr Ile Pro 290 295 300

Tyr Thr Ile Asn Thr Val Ala Glu His Leu Asp Met Leu Met Thr Cys 305 310 315 320

His His Leu Asp Lys Arg Ile Arg Glu Asp Leu Gln Phe Ser Gln Ser 325 330 335

Arg Ile Arg Pro Gly Ser Ile Ala Ala Glu Asp Val Leu His Asp Ile
340 345 350

Gly Val Ile Ala Met Thr Ser Ser Asp Ser Gln Ala Met Gly Arg Ala

Gly Glu Val Ile Pro Arg Thr Trp Gln Thr Ala Asp Lys Asn Lys Lys 370 375 , 380

- Glu Phe Gly Lys Leu Pro Glu Asp Gly Ala Asp Asn Asp Asn Phe Arg 385 390 395 400
- Ile Lys Arg Tyr Ile Ser Lys Tyr Thr Ile Asn Pro Ala Leu Thr His
 405 410 415
- Gly Val Ser Glu Tyr Ile Gly Ser Val Glu Glu Gly Lys Ile Ala Asp 420 425 430
- Leu Val Val Trp Asn Pro Ala Phe Phe Gly Val Lys Pro Lys Ile Val
- Ile Lys Gly Gly Met Val Val Phe Ser Glu Met Gly Asp Ser Asn Ala 450 460
- Ser Val Pro Thr Pro Gln Pro Val Tyr Tyr Arg Glu Met Phe Gly His 465 470 475 480
- His Gly Lys Ala Lys Phe Asp Thr Ser Ile Thr Phe Val Ser Lys Val
- Ala Tyr Glu Asn Gly Val Lys Glu Lys Leu Gly Leu Glu Arg Lys Val 500 505 510
- Leu Pro Val Lys Asn Cys Arg Asn Ile Thr Lys Lys Asp Phe Lys Phe 515
- Asn Asn Lys Thr Ala His Ile Thr Val Asp Pro Lys Thr Phe Glu Val 530 535 540
- Phe Val Asp Gly Lys Leu Cys Thr Ser Lys Pro Ala Ser Glu Val Pro 545 550 555 560

Leu Ala Gln Arg Tyr Thr Phe Phe 565

1 <210> 7 <211> 2183 <212> DNA <213> Helicobacter felis <220> <221> CDS <222> (3)..(683) <220> <221> CDS <222> (694)..(2181) <400> 7 tc gtg aaa ctc aca ccc aaa gag caa gaa aag ttc ttg tta tat tat 47 Val Lys Leu Thr Pro Lys Glu Gln Glu Lys Phe Leu Leu Tyr Tyr 15 5 10 1 gcg ggc gaa gtg gct aga aag cgc aaa gca gag ggc tta aag ctc aat 95 Ala Gly Glu Val Ala Arg Lys Arg Lys Ala Glu Gly Leu Lys Leu Asn 30 25 20 caa ccc gaa gcc att gcc tac att agt gcc cat att atg gac gag gcg 143 Gln Pro Glu Ala Ile Ala Tyr Ile Ser Ala His Ile Met Asp Glu Ala 45 40 35 cgc cgt ggc aaa aaa acc gtt gct gaa ctt atg gaa gaa tgt atg cac 191 Arg Arg Gly Lys Lys Thr Val Ala Glu Leu Met Glu Glu Cys Met His 60 55 50 ttt ttg aaa aaa gat gag gtg atg ccc ggt gtg ggg aat atg gtc cct 239 Phe Leu Lys Lys Asp Glu Val Met Pro Gly Val Gly Asn Met Val Pro

70

65

. 75

| gat ' | ttq | ggc | gta | gaa | gcc | act | ttc | ccc | gat | ggc | acc | aaa | ctc | gta | acc | 287 |
|-------|------|-------|-------|-------|-------|--------|-----|-------|-------|-------------------|-------|-------|------|-------|-------|-----|
| | | | | | | Thr | | | | | | | | | | • |
| 80 | | , - | | | 85 | | | | | 90 | | | | | 95 | |
| | | | | | | | | | | | | | | | | |
| ata | aat | tgg | ccc | att | gaa | cct | gat | gaa | cac | ttt | aaa | gcc | ggt | gaa | gtg | 335 |
| | | | | | | Pro | | | | | | | | | | |
| | | | | 100 | | | | | 105 | | | | | 110 | | |
| | | | | | | | | | | | | | | | | |
| aaa | ttt | ggc | tgt | gat | aaa | gac | att | gag | ctc | aac | gtg | ggt | aag | gaa | gtt | 383 |
| Lys | Phe | Gly | Cys | Asp | Lys | Asp | Ile | Glu | Leu | Asn | Val | Gly | Lys | Glu | Val | |
| | | | 115 | | | | | 120 | | | | | 125 | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | aac | | | | | | | | | | 431 |
| Thr | Glu | Leu | Glu | Val | Thr | Asn | Glu | Gly | Pro | Lys | Ser | Leu | His | Val | Gly | |
| | | 130 | | | | | 135 | | | | | 140 | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | cgg | 479 |
| Ser | His | Phe | His | Phe | Phe | Glu | Thr | Asn | Lys | Ala | | | Phe | Asp | Arg | |
| | 145 | | | | | 150 | | | | | 155 | | | | | |
| | | | | | | | | | | | | | | | | 507 |
| | | | | | | | | | | | | | | | cta | 527 |
| Glu | Lys | Ala | Туг | Gly | Lys | Arg | Leu | Asp | Ile | | | Gly | Asn | Thr | Leu | |
| 160 | | | | | 165 | | | • | . • | 170 |) | | | • | 175 | |
| | | | | | | | | | | | | | | | | רחר |
| | | | | | | | | | | | | | | | ggc | 575 |
| Arg | Ile | e Gly | / Ala | a Gly | , Gln | Thr | Arg | Lys | | | ı Lei | 1 116 | Pro | | ı Gly | |
| | | | | 180 |) | | | | 185 |) | | | | 190 | J | |
| | | | | | | | | | | | | + | | - 5+1 | - ~~~ | 623 |
| | | | | | | | | | | | | | | | t gcg | |
| Gly | Sei | c Lys | | | l Il∈ | e Gly | Met | | | / те | ı va. | i ASI | 20! | | e Ala | |
| | | | 19 | 5 | | | | 200 | , | | | | 20. | , | | |
| | | | | | | | | o cta | | | ת מכי | a aa: | a to | t ca | c gga | 671 |
| | | | | | | | | | | | | | | | s Gly | |
| Asp | GI | | | г гу | S UT: | э груг | 215 | | , 115 | , ₁₂ , | | 22 | | | | |
| | | 21 | U | | | | ~ . | - | | | | | | | | |
| ++- | • a+ | c 22 | a ta | a aa | agaci | tccc | atσ | aaa | atσ | aaa | aaa | caa | gaq | tat | gta | 720 |
| | - au | c aa | y ca | ~ 99 | | | | | - 9 | | | | | | - | |

Met Lys Met Lys Lys Gln Glu Tyr Val Phe Ile Lys . aac acc tac gga ccc acc aca ggc gat aaa gtg cgc tta gga gat acc Asn Thr Tyr Gly Pro Thr Thr Gly Asp Lys Val Arg Leu Gly Asp Thr gat ctt tgg gca gaa gta gaa cat gac tat acc act tat ggc gaa gag Asp Leu Trp Ala Glu Val Glu His Asp Tyr Thr Thr Tyr Gly Glu Glu ctc aaa ttt ggc gcg ggt aaa act atc cgt gag ggt atg ggt cag agc Leu Lys Phe Gly Ala Gly Lys Thr Ile Arg Glu Gly Met Gly Gln Ser aat agc cca gat gaa aac acc tta gat tta gtg atc acc aac gcg atg Asn Ser Pro Asp Glu Asn Thr Leu Asp Leu Val Ile Thr Asn Ala Met att atc gac tac acc ggg att tat aaa gcc gac att ggt att aaa aat Ile Ile Asp Tyr Thr Gly Ile Tyr Lys Ala Asp Ile Gly Ile Lys Asn ggc aaa atc cat ggt att ggc aag gcg ggg aac aaa gac atg caa gat Gly Lys Ile His Gly Ile Gly Lys Ala Gly Asn Lys Asp Met Gln Asp ggc gta agc cct cat atg gtc gtg ggt gtg ggc aca gaa gca cta gca Gly Val Ser Pro His Met Val Val Gly Val Gly Thr Glu Ala Leu Ala ggg gaa ggt atg att att acc gct ggg ggg atc gat tcg cac acc cac Gly Glu Gly Met Ile Ile Thr Ala Gly Gly Ile Asp Ser His Thr His ttc ctc tct ccc caa caa ttc cct acc gct cta gcc aat ggt gtt aca Phe Leu Ser Pro Gln Gln Phe Pro Thr Ala Leu Ala Asn Gly Val Thr

| | | | | | | aca Thr | | | | | | | | | | 1200 |
|------|-------------|-------|----------------|----------------|----------|------------|----------|------|-------|-------|-------|-------|----------|-------|-------|------|
| IIIL | met | , iie | O1 y | 385 | <u>1</u> | | , | | 390 | • | - | | | 395 | | |
| 3.00 | atc | act | cca | aac | aaa : | tgg | aac | ttq | cac | cgc | atg | ttg | cgc | gca | gct | 1248 |
| | | | | | | Trp | | | | | | | | | | |
| IIIT | 116 | 1111 | 400 | O ₁ | 2,0 | | | 405 | | , | | | 410 | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | gta | | | | | | | | | | 1296 |
| Glu | Glu | Tyr | Ser | Met | Asn | Val | Gly | Phe | Leu | Gly | Lys | Gly | Asn | Ser | Ser | |
| | | 415 | | | | | 420 | | | | | 425 | | | | |
| | | | <i>a</i> 2 2 2 | at t | at a | gaa | caa | αta | αаа | aca | aac | aca | att | ggc | ttt | 1344 |
| | | | | | | Glu | | | | | | | | | | |
| ser | 430 | цуз | GLII | дси | vuz | 435 | | | | | 440 | | | _ | | |
| | 450 | | | | | | | | | | | | | | | |
| aaa | ttg | cat | gaa | gac | tgg | ggc | aca | aca | cca | agt | gcg | atc | gat | cac | tgc | 1392 |
| | | | | | | Gly | | | | | | | | | | |
| 445 | | | | | 450 | | | | | 455 | | | | | 460 | |
| | | | | | | | | | | | | | | | | |
| | | | | | | tac | | | | | | | | | | 1440 |
| Leu | Ser | Val | Ala | Asp | Glu | Tyr | Asp | Val | Gln | Val | Cys | Ile | His | Thr | Asp | |
| | | | | 465 | | | | - | 470 | - | | • | | 475 | | |
| 200 | ata | 22+ | asa | aca | aat | tat | ata | gat | gac | acc | : cta | aat | gca | atg | aac | 1488 |
| | | | | | | | | | | | | | | | Asn | |
| 1111 | V 41 | | 480 | | 2 | - | | 485 | | | | | 490 | | | |
| | | | | | | | | | | | | | | | | |
| ggg | cgc | gcc | ato | cat | gcc | : tac | cac | \att | gag | gga | gcg | ggc | gga | a gga | cac | 1536 |
| Gly | Arg | Ala | ılle | His | Ala | Tyr | His | Ile | Glu | Gly | / Ala | Gl | Gly | / Gly | / His | |
| | | 495 | . | | | | 500 | | | | | 505 | <u>.</u> | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | tcc | 1584 |
| Ser | Pro | Asp | Val | . Ile | Thr | Met | Ala | Gly | , Glu | Lei | | | e Le | ı Pro | Ser | |
| | 510 |) | | | | 515 | , | | | | 520 |) | | | | |
| | | | | | | | | | | | | | | . ~- | | 1632 |
| tco | c acc | aco | c ccc | c act | att | ccc | : tat | aco | att | . aat | ac | y gti | . gc | a ya | a cac | 1032 |

| Ser | Thr | Thr | Pro | Thr | | Pro | Tyr | Thr | Ile | | Thr | Val | Ala | Glu | | |
|------------|-----|-------|-------|-------|-------|-----|------|-------|-------|-------|-------|-------|-------|-------|------------|------|
| 525 | | | | | 530 | | | | | 535 | | | | | 540 | |
| tta | qac | atg | ctc | atg | acc | tgc | cac | cac | cta | gat | aag | cgc | atc | cgc | gag | 1680 |
| Leu | - | | | | | | | | | | | | | | | |
| | _ | | | 545 | J. | • | | | 550 | | | | | 555 | | |
| | | | | | | | | | | | | | | | | |
| gat | | | | | | | | | | | | | | | | 1728 |
| Asp | Leu | Gln | Phe | Ser | Gln | Ser | Arg | | Arg | Pro | Gly | Ser | | Ala | Ala | |
| | | | 560 | | | | | 565 | | | | | 570 | | | |
| aaa | aat | ata | ctc | cat | gat | att | ggc | ata | atc | gcg | atg | act | agc | tcc | gat | 1776 |
| | | | | | | | Gly | | | | | | | | | |
| | | 575 | | | - | | 580 | | | | | 585 | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | caa | 1824 |
| Ser | Gln | Ala | Met | Gly | Arg | Ala | Gly | Ġlu | Val | Ile | | Arg | Thr | Trp | Gln | |
| | 590 | | | | | 595 | | | | | 600 | | | | | |
| | | | | | | | | +++ | ~~+ | 226 | c++ | cct | a a a | gat | aat | 1872 |
| | | | | | | | | | | | | | | | ggt Gly | 10,2 |
| 7nr 605 | Ala | Asp | гуѕ | ASII | 610 | | Giu | THE | OLY | 615 | | 110 | 014 | | 620 | |
| 003 | | | | | 010 | | | | | | | | | | | |
| gca | gat | aac | gac | aac | ttc | cgc | atc | aaa | cgc | tat | ato | tcc | aaa | tac | acc | 1920 |
| Ala | Asp | Asn | Asp | Asn | Phe | Arg | Ile | Lys | Arg | Tyr | Ile | Ser | Lys | Tyr | Thr | |
| | | | | 625 | | | | | 630 |) | | | | 635 | • | |
| | | | | | | | | | | | | | | | | 1968 |
| | | | | | | | | | | | | | | | gtg | 1900 |
| Ile | Asr | 1 Pro | | | ı Tnr | HIS | . ст | 645 | | . GIL | ттуг | . 116 | 650 | | . Val | |
| | | | 640 | , | | | | 040 | , | | | | | - | | |
| gaa | gag | g ggc | aag | g ato | gco | gad | tte | g gtç | gto | g tgg | g aat | cct | gc | e ttt | ttt | 2016 |
| | | | | | | | | | | | | | | | e Phe | |
| | | 655 | 5 | | | | 660 |) | | | | 665 | 5 | | | ٠ |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | tct | 2064 |
| Gly | | | s Pro | o Lys | s Ile | | | e Lys | s Gly | y Gly | | | L Va | ⊥ Ph∈ | e Ser | |
| | 670 |) | | | | 67 | 5 | | | | - 68 | Ü | | | | |

gaa atg ggc gat tct aac gcg tcc gtg ccc acg cct cag ccg gtt tat Glu Met Gly Asp Ser Asn Ala Ser Val Pro Thr Pro Gln Pro Val Tyr tac cgc gaa atg ttt ggg cac cac ggc aag gcg aaa ttt gac acc agc Tyr Arg Glu Met Phe Gly His His Gly Lys Ala Lys Phe Asp Thr Ser atc act ttt cgt gtc tca agc gg Ile Thr Phe Arg Val Ser Ser <210> 8 <211> 226 <212> PRT <213> Helicobacter felis <400> 8 Val Lys Leu Thr Pro Lys Glu Gln Glu Lys Phe Leu Leu Tyr Tyr Ala Gly Glu Val Ala Arg Lys Arg Lys Ala Glu Gly Leu Lys Leu Asn Gln Pro Glu Ala Ile Ala Tyr Ile Ser Ala His Ile Met Asp Glu Ala Arg Arg Gly Lys Lys Thr Val Ala Glu Leu Met Glu Glu Cys Met His Phe Leu Lys Lys Asp Glu Val Met Pro Gly Val Gly Asn Met Val Pro Asp Leu Gly Val Glu Ala Thr Phe Pro Asp Gly Thr Lys Leu Val Thr Val

Asn Trp Pro Ile Glu Pro Asp Glu His Phe Lys Ala Gly Glu Val Lys
100 105 110

Phe Gly Cys Asp Lys Asp Ile Glu Leu Asn Val Gly Lys Glu Val Thr
115 120 125

Glu Leu Glu Val Thr Asn Glu Gly Pro Lys Ser Leu His Val Gly Ser 130 135 140

Lys Ala Tyr Gly Lys Arg Leu Asp Ile Pro Ser Gly Asn Thr Leu Arg 165 170 175

Ile Gly Ala Gly Gln Thr Arg Lys Val Gln Leu Ile Pro Leu Gly Gly
180 185 190

Ser Lys Lys Val Ile Gly Met Asn Gly Leu Val Asn Asn Ile Ala Asp 195 200 205

Glu Arg His Lys His Lys Ala Leu Asp Lys Ala Lys Ser His Gly Phe 210 215 220

Ile Lys

225

<210> 9

<211> 496

<212> PRT

<213> Helicobacter felis

<400> 9

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1 5 10 15

Gly Asp Lys Val Arg Leu Gly Asp Thr Asp Leu Trp Ala Glu Val Glu

His Asp Tyr Thr Thr Tyr Gly Glu Glu Leu Lys Phe Gly Ala Gly Lys

35
40
45

- Thr Ile Arg Glu Gly Met Gly Gln Ser Asn Ser Pro Asp Glu Asn Thr
 50 55 60
- Leu Asp Leu Val Ile Thr Asn Ala Met Ile Ile Asp Tyr Thr Gly Ile 65 70 75 80
- Tyr Lys Ala Asp Ile Gly Ile Lys Asn Gly Lys Ile His Gly Ile Gly 85 90 95
- Lys Ala Gly Asn Lys Asp Met Gln Asp Gly Val Ser Pro His Met Val
- Val Gly Val Gly Thr Glu Ala Leu Ala Gly Glu Gly Met Ile Ile Thr
- Ala Gly Gly Ile Asp Ser His Thr His Phe Leu Ser Pro Gln Gln Phe 130 135 140
- Pro Thr Ala Leu Ala Asn Gly Val Thr Thr Met Phe Gly Gly Gly Thr 145 150 155 160
- Gly Pro Val Asp Gly Thr Asn Ala Thr Thr Ile Thr Pro Gly Lys Trp 165 170 175
- Asn Leu His Arg Met Leu Arg Ala Ala Glu Glu Tyr Ser Met Asn Val 180 185 190
- Gly Phe Leu Gly Lys Gly Asn Ser Ser Ser Lys Lys Gln Leu Val Glu 195 200 205
- Gln Val Glu Ala Gly Ala Ile Gly Phe Lys Leu His Glu Asp Trp Gly
 210 215 220

| Thr 225 | Thr | Pro | Ser | Ala | Ile 230 | Asp | His | Cys | | Ser 235 | Val | Ala | Asp | Glu | Tyr 240 |
|------------|-----|-----|-----|-----|------------|-----|------|-----|-----|------------|-----|-----|-----|-----|------------|
| | _ | • | 1 | 0 | T1.0 | uic | Th r | λen | Thr | Val | Asn | Glu | Ala | Glv | Tvr |

- Asp Val Gln Val Cys Ile His Thr Asp Thr Val Asn Glu Ala Gly Tyr
 245 250 255
- Val Asp Asp Thr Leu Asn Ala Met Asn Gly Arg Ala Ile His Ala Tyr 260 265 270
- His Ile Glu Gly Ala Gly Gly Gly His Ser Pro Asp Val Ile Thr Met 275 280 285
- Ala Gly Glu Leu Asn Ile Leu Pro Ser Ser Thr Thr Pro Thr Ile Pro 290 295 300
- Tyr Thr Ile Asn Thr Val Ala Glu His Leu Asp Met Leu Met Thr Cys 305 310 315 320
- His His Leu Asp Lys Arg Ile Arg Glu Asp Leu Gln Phe Ser Gln Ser 325 330 335
- Arg Ile Arg Pro Gly Ser Ile Ala Ala Glu Asp Val Leu His Asp Ile 340 345 350
- Gly Val Ile Ala Met Thr Ser Ser Asp Ser Gln Ala Met Gly Arg Ala 355 360 365
- Gly Glu Val Ile Pro Arg Thr Trp Gln Thr Ala Asp Lys Asn Lys Lys 370 375 380
- Glu Phe Gly Lys Leu Pro Glu Asp Gly Ala Asp Asn Asp Asn Phe Arg 385
- Ile Lys Arg Tyr Ile Ser Lys Tyr Thr Ile Asn Pro Ala Leu Thr His
 405 410 415
- Gly Val Ser Glu Tyr Ile Gly Ser Val Glu Glu Gly Lys Ile Ala Asp 420 425 430

Leu Val Val Trp Asn Pro Ala Phe Phe Gly Val Lys Pro Lys Ile Val .435

Ile Lys Gly Gly Met Val Val Phe Ser Glu Met Gly Asp Ser Asn Ala 450 455 460

Ser Val Pro Thr Pro Gln Pro Val Tyr Tyr Arg Glu Met Phe Gly His 465 470 475 480

His Gly Lys Ala Lys Phe Asp Thr Ser Ile Thr Phe Arg Val Ser Ser 485 490 495

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<220>

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Val Lys Leu Thr Pro Lys Glu Gln Glu Lys Phe Leu Leu Tyr Tyr Ala

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ggc gaa gtg gct aga aag cgc aaa gcg gag ggc tta aag ctc aac caa 97 Gly Glu Val Ala Arg Lys Arg Lys Ala Glu Gly Leu Lys Leu Asn Gln 20 25 30

ccc gaa gcc att gcc tac att agt gcc cat att atg gac gag gcg cgc 145

| Pro | Glu | Ala | Ile | Ala | Tyr | Ile | Ser | Ala | His | Ile | Met | Asp | Glu | Ala | Arg | |
|------------|-------|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------------|-------|-----|
| | | 35 | | | | | 40 | | | | | 45 | | | | |
| | | | | | | | | | | | | | | | | |
| cat | ggc | aaa | aag | acc | gtt | gcg | gaa | ctt | atg | gaa | gag | tgt | atg | cac | ttt | 193 |
| | | | | | | | | | | | | | | His | | |
| 1149 | 50 | -1 | - | | | 55 | | | | | 60 | | | | | |
| | • | | | | | | | | | | | | | | | |
| ++a | 222 | aaa | gac | gag | ata | atq | ccc | ggt | gtg | ggg | aat | atg | gtc | cct | gat | 241 |
| | | | | | | | | | | | | | | Pro | | |
| 65 | цуо | цуо | 110P | 014 | 70 | | | - | | 75 | | | | | 80 | |
| 63 | | | | | , , | | | | | | | | | | | |
| | ~~~ | ~+ ~ | ~~~ | act | act | +++ | CCC | gat | aac | acc | aaa | ctc | gta | acc | gtg | 289 |
| | | | | | | | | | | | | | | Thr | | |
| Leu | GTÀ | vaı | GIU | | 1111 | 1116 | 110 | 7105 | 90 | | -1- | | | 95 | | |
| | | | | 85 | | | | | 50 | | | | | | | |
| | | | | | | ~~+ | ~~~ | a 2 C | ++0 | 222 | aca | aac | gaa | atc | aaa | 337 |
| | | | | | | | | | | | | | | gtc Val | | |
| Asn | Trp | Pro | | | Pro | Asp | GIU | 105 | FIIC | цуз | 7114 | Orj | 110 | Val | -1- | |
| | | | 100 | | | | | 103 | | | | | 110 | | | |
| | | | | | | | | ~+ ~ | 220 | ~~~ | aat | 224 | maa | att | acc | 385 |
| | | | | | | | | | | | | | | gtt | | 300 |
| Phe | Gly | | | Lys | Asp | Ile | | | Asn | Ala | г СТУ | | | ı Val | 1111 | |
| | | 115 | 5 | | | | 120 |) | | | | 125 | | | | |
| | | | | | | | | | | | | | | | | 122 |
| | | | | | | | | | | | | | | | agc | 433 |
| Glı | ı Leı | ı Glı | ı Val | L Thr | Asn | Glu | Gly | , Pro | Lys | Ser | | | va. | r Gly | Ser | |
| | 130 |) | | | | 135 | | | | | 140 |) | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | g gaa | 481 |
| His | s Phe | e His | s Ph | e Phe | e Glu | ı Ala | Asr | n Lys | s Ala | a Lei | ı Lys | s Phe | e As | p Arc | g Glu | |
| 14 | 5 | | | | 150 |) | | | | 15 | 5 | | | | 160 | |
| | | | | | | | | | | | | | | | | |
| aa | a gc | c ta | t gg | c aa | a cgo | c cta | a gat | t att | ccc | c to | t gg | c aad | c ac | g cta | a cgc | 529 |
| Ly | s Al | а Ту | r Gl | у Lу | s Ar | g Lei | ı Ası | p Ile | e Pro | Se: | r Gl | y Ası | n Th | r Le | ı Arg | |
| | | | | 16 | 5 | | | | 170 | 0 | | | | 17 | 5 | |
| | | | | | | | | | | | | | | | | |
| at | t ga | g qc | a gq | a ca | a ac | c cgt | t aa | a gt | g ca | g tt | a aț | c cc | t ct | t gg | c ggc | 577 |
| | | | | | | | | | | | | | | | y Gly | |
| - - | | <u>.</u> | 1 8 | | | | | 18. | | | | | 19 | | | |

| agt | aaa | aaa | gtg | att | ggc | atg | aac | ggg | ctt | gtg | aat | aat | att | gca | gat | 625 |
|--------|-------|-------|-------|-------|-------|-------|------|-------|------|------|-------|-------|------|-------|-----|------|
| Ser | Lys | Lys | Val | Ile | Gly | Met | Asn | Gly | Leu | Val | Asn | Asn | Ile | Ala | Asp | |
| | | 195 | | | | | 200 | | | | | 205 | | | | |
| | | | | | | | | | | | | | | | | |
| gaa | cgc | cat | aaa | cac | aaa ' | gcg | tta | gaa | aaa | gca | aaa | tct | cac | gga | ttt | 673 |
| _ | | | Lys | | | | | | | | | | | | | |
| | 210 | | | | | 215 | | | | | 220 | | | | | |
| | | | | | | | | | | | | | | | | |
| atc | aaa | taa | ggag | gacto | cc a | atg a | aa a | atg a | aa a | aa c | caa g | gag t | at q | gta a | at | 722 |
| Ile | | | .55 - | | | et I | | | | | | | | | | |
| 225 | | | | | | | _ | 230 | | | | | 35 | | | |
| 223 | | | | | | | | | | | | | | | | |
| acc | tac | gga | cct | acc | aca | ggc | gac | aaa | gtg | cgc | tta | gga | gat | acc | gat | 770 |
| | | | Pro | | | | | | | | | | | | | |
| | - 4 - | 240 | | | | _ | 245 | - | | | | 250 | | | | |
| | | | | | | | | | | | | | | | | |
| ctt | t.aa | αca | gaa | ata | gaa | cat | gac | tat | acc | act | tat | ggc | gaa | gag | ctc | 818 |
| | | | Glu | | | | | | | | | | | | | |
| 100 | 255 | | 02 | | | 260 | • | - | | | 265 | _ | | | | |
| | 200 | | | | | | | | | | | | | | | |
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| | | | Ala | | | | | | | | | | | | | |
| 270 | 20 | 1 | | 1 | 275 | | | | | 28Ö | | | | | 285 | |
| 2,0 | | | | | | | | | | | | | | | | |
| agt | cca | gat | gaa | aac | acc | cta | gat | tta | gtc | atc | acc | aac | gcg | atg | att | 914 |
| - | | | Glu | | | | | | | | | | | | | |
| 001 | | | | 290 | | | • | | 295 | | | | | 300 | | |
| | | | | | | | | | | | | | | | | |
| att | gac | tac | acc | aaa | att | tac | aaa | qcc | gac | att | ggc | att | aaa | aat | ggc | 962 |
| | | | Thr | | | | | | | | | | | | | |
| 110 | 1100 | - 7 - | 305 | 1 | | | _ | 310 | - | | - | | 315 | | | |
| | | | 500 | | | | | | | | | | | | | |
| aaa | atic | cat | ggc | att | gac | aaq | qca | gga | aac | aag | gac | atg | caa | gat | ggc | 1010 |
| | | | Gly | | | | | | | | | | | | | |
| د ړ ــ | 116 | 320 | | | 1 | -,5 | 325 | | | • | • | 330 | | - | - | |
| | | 520 | , | | | | 720 | • | | | , | | | | | |
| a+- | 200 | + | cat | 2+~ | ata | ata | aat | ata | ממכ | aca | . gaa | gca | tta | gca | gaa | 1058 |
| yıa | ayo | | . cat | ary | gic | . yry | 991 | 919 | 990 | | 544 | 500 | | 500 | 222 | |

| /al | Ser | Pro | His | Met | Val | Val | Gly | Val | Gly | Thr | Glu | Ala | Leu | Ala | Gly | |
|------------------|------|------------------|-----|------|------|-------------------|-----|------|-----|------|-----|-----|------|-------|------|------|
| | 335 | | | | | 340 | | | | | 345 | | | | | |
| | | | | | | | | | | | | | | | | |
| gaa | ggt | atg | att | att | acc | gct | ggg | ggg | atc | gat | tca | cac | acc | cac | ttc | 1106 |
| | | | Ile | | | | | | | | | | | | | |
| 350 | 2 | | | | 355 | | | | | 360 | | | | | 365 | |
| | | | | | | | | | | | | | | | | |
| ata | tct | cca | caa | caa | ttc | cct | acc | gct | cta | gcc | aat | ggc | gtt | aca | acc | 1154 |
| | | | Gln | | | | | | | | | | | | | |
| | | | | 370 | | | | | 375 | | | _ | | 380 | | |
| | | | | 0.0 | | | | | | | | | | | | |
| ata | +++ | aac | ggt | aac | aca | aat | cca | ota | σat | aac | acq | aat | aca | act | acc | 1202 |
| _ | | | Gly | | | | | | | | | | | | | |
| .100 | 1110 | O _T y | 385 | O±3 | **** | <i>0</i> 1 | | 390 | F | 1 | | | 395 | | | |
| | | | 303 | | | | | 330 | | | | | 000 | | | |
| - - - | 2.at | 000 | ggc | 222 | + aa | 220 | ++~ | CaC | cac | ato | tta | cac | aca | act | gaa | 1250 |
| | | | Gly | | | | | | | | | | | | | 1200 |
| 11e | IIII | | GIY | гуу | 115 | ASII | 405 | 1113 | Arg | ricc | шец | 410 | 1124 | 1114 | OI u | |
| | | 400 | | | | | 405 | | | | | 410 | | | | |
| | | | | . 4. | | | | | ~~~ | | ~~^ | 22+ | 200 | + 0.0 | 2.4t | 1200 |
| | | | atg | | | | | | | | | | | | | 1298 |
| Glu | | Ser | Met | Asn | Val | | Pne | Leu | GTÀ | гуѕ | | Asn | ser | ser | ser | |
| | 415 | | | | | 420 | | | | | 425 | | | | | |
| | | | | | | | | | | | | | | | | 1046 |
| | | | ctt | | | | | | | | | | | | | 1346 |
| Lys | Lys | Gln | Leu | Val | | Gln | Ile | Glu | Ala | | | Ile | GLy | Phe | | |
| 430 | | | | | 435 | | | | | 440 | | | | | 445 | |
| | | | | | | | | | | | | | | | | |
| _ | | - | gac | | | | | | | | | | | | | 1394 |
| Leu | His | Glu | Asp | Trp | Gly | Thr | Thr | Pro | Ser | Ala | Ile | Asp | His | Cys | Leu | |
| | | | | 450 | | | | | 455 | | | | | 460 | | |
| | | | | | | | | | | | | | | | | |
| agc | gta | gca | gat | gaa | tac | gat | gtg | caa | gtt | tgt | atc | cac | acc | gat | acg | 1442 |
| Ser | Val | Ala | Asp | Glu | Tyr | Asp | Val | Gln | Val | Cys | Ile | His | Thr | Asp | Thr | |
| | | | 465 | | | | | 470 | | | | | 475 | | | |
| | | | | | | | | | | | | | | | | |
| gito | aat | gag | gca | ggt | tat | gta | gat | gac | acc | ctg | aat | gcg | atg | aac | ggg | 1490 |
| Val | Asn | Glu | Ala | Gly | Tyr | Val | Asp | Asp | Thr | Leu | Asn | Ala | Met | Asn | Gly | |
| | | 480 | l | | | | 485 | | | | | 490 | | | | |

| - | | | | | | | | gag | | | | | | | | 1538 |
|-----|-----|-----|-----|-----|-------|------------|-----|-----|-----|-----|------------|-----|-------|-----|-----|------|
| Arg | | Ile | His | Ala | Tyr | His 500 | Ile | Glu | Gly | Ala | Gly 505 | Gly | Gly | His | Ser | |
| | 495 | | | | | 300 | | | | | | | | | | |
| | - | _ | | | | | | gag | | | | | | | | 1586 |
| Pro | Asp | Val | Ile | Thr | Met | Ala | Gly | Glu | Leu | Asn | Ile | Leu | Pro | Ser | Ser | |
| 510 | | | | | 515 | | | | | 520 | | | | | 525 | |
| | | | | | | | | att | | | | | | | | 1634 |
| Thr | Thr | Pro | Thr | Ile | Pro | Tyr | Thr | Ile | Asn | Thr | Val | Ala | Glu | His | Leu | |
| | | | | 530 | | | | | 535 | | | | | 540 | | |
| gac | atg | ctc | atg | acc | tgc | cac | cac | cta | gat | aaa | cgc | atc | cgc | gag | gat | 1682 |
| Asp | Met | Leu | Met | Thr | Cys | His | His | Leu | Asp | Lys | Arg | Ile | Arg | Glu | Asp | |
| | | | 545 | | | | | 550 | | | | | 555 | | | |
| tta | caa | ttt | tcc | caa | agc | cgt | atc | cgc | ccc | ggc | tct | atc | gcc | gct | gaa | 1730 |
| Leu | Gln | Phe | Ser | Gln | Ser | Arg | Ile | Arg | Pro | Gly | Ser | Ile | Ala | Ala | Glu | |
| | | 560 | · | | | | 565 | | | | | 570 | | | | |
| gat | gtg | ċtc | cat | gat | att | ggc | gtg | atc | gcg | atg | aca | agc | tcg | gat | tcg | 1778 |
| Asp | Val | Leu | His | Asp | I'le | Gly | Val | Ile | Ala | Met | Thr | Ser | Ser | Asp | Ser | |
| | 575 | | | | | 580 | | - | | | 585 | | | | | |
| caa | gca | atg | ggg | cgc | gct | ggc | gaa | gtg | att | cct | cga | act | tgg | cag | act | 1826 |
| Gln | Ala | Met | Gly | Arg | Ala | Gly | Glu | Val | Ile | Pro | Arg | Thr | Trp | Gln | Thr | |
| 590 | | | | | 595 | | | | | 600 | | | | | 605 | |
| gcg | gat | aag | aat | aaa | aaa | gaa | ttt | ggt | aag | ctt | cct | gaa | gat | agt | gca | 1874 |
| Ala | Asp | Lys | Asn | Lys | Lys | Glu | Phe | Gly | Lys | Leu | Pro | Glu | Asp | Ser | Ala | |
| | | | | 610 | | | | | 615 | | | | | 620 | | |
| gat | aac | gac | aac | ttc | cgt | ato | aaa | cgc | tac | atc | tcc: | aaa | tac | act | att | 1922 |
| Asp | Asn | Asp | Asn | Phe | Arg | Ile | Lys | Arg | Tyr | Ile | Ser | Lys | Tyr | Thr | Ile | |
| | | | 625 | İ | | | | 630 | | | | | 635 | | | |
| aac | ccc | gct | cta | acc | : cat | ggg | gta | ago | gag | tat | ato | ggc | : tct | gtg | gaa | 1970 |

| Asn | Pro | Ala 640 | Leu | Thr | His | Gly | Val 645 | Ser | Glu | Tyr | Ile | Gly 650 | Ser | Val | Glu | |
|-----|-----|------------|-----|-----|-----|-----|------------|-----|-----|-----|-----|------------|-----|-----|-----|------|
| gag | qqc | aaa | atc | gct | gat | ttg | gtg | gtg | tgg | aat | cct | gcc | ttt | ttt | ggt | 2018 |
| | | | | | | | Val | | | | | | | | | |
| | 655 | - | | | : | 660 | | | | | 665 | | | | | |
| | | | | | • | | | | | | | | | | | |
| gtg | aaa | cct | aag | att | gtg | atc | aaa | ggc | ggt | atg | gtg | gtc | ttc | tct | gaa | 2066 |
| Val | Lys | Pro | Lys | Ile | Val | Ile | Lys | Gly | Gly | Met | Val | Val | Phe | Ser | Glu | |
| 670 | | | | | 675 | | | | | 680 | | | | | 685 | |
| | | | | | | | | | | | | | | | | |
| atg | ggc | gac | tcc | aac | gcg | tcc | gtg | cct | aca | cct | cag | ccg | gtt | tat | tac | 2114 |
| Met | Gly | Asp | Ser | Asn | Ala | Ser | Val | Pro | Thr | Pro | Gln | Pro | Val | Tyr | Tyr | |
| | | | | 690 | | | | | 695 | | | | | 700 | | |
| | | | | | | | | | | | | | | | | |
| cgc | gaa | atg | ttt | ggg | cat | cac | ggc | aag | gcg | aaa | ttt | gac | acc | agc | atc | 2162 |
| Arg | Glu | Met | Phe | Gly | His | His | Gly | Lys | Ala | Lys | Phe | Asp | Thr | Ser | Ile | |
| | | | 705 | | | | | 710 | | | | | 715 | | | |
| | | | | | | | | | | | | | | | | |
| act | ttt | gtt | tcc | aaa | gtc | gcc | tat | gaa | aat | ggc | gtg | aaa | gaa | aaa | cta | 2210 |
| Thr | Phe | Val | Ser | Lys | Val | Ala | Tyr | Glu | Asn | Gly | Val | Lys | Glu | Lys | Leu | |
| | | 720 | | | | | 725 | | | | | 730 | | | | |
| | | | | | | | | | | | | | | | | |
| | | | _ | | | | ccc | | | | | | | | | 2258 |
| Gly | Leu | Glu | Arg | Lys | Val | Leu | Pro | Val | Lys | Asn | Cys | Arg | Asn | Ile | Thr | |
| | 735 | | | | | 740 | | | | | 745 | | | | | |
| | | | | | | | | | | | | | | | | |
| _ | | _ | | | | | aac | | | | | | | | | 2306 |
| Lys | Lys | Asp | Phe | Lys | Phe | Asn | Asn | Lys | Thr | | His | Ile | Thr | Val | | |
| 750 | | | | | 755 | | | | | 760 | | | | | 765 | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | gta | | | | | | | | | 2354 |
| Pro | Lys | Thr | Phe | | Val | Phe | Val | Asp | | | Leu | Cys | Thr | | | |
| | | | | 770 | | | | | 775 | | | | | 780 | | |
| | | | | | | • | | | | | | | | 4 . | | 0200 |
| | - | | _ | | | | gcc | | | | | | | | | 2399 |
| Pro | ALa | Ser | | val | Pro | ьeu | Ala | | _ | Tyr | rnr | rne | | | | |
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Gly Glu Val Ala Arg Lys Arg Lys Ala Glu Gly Leu Lys Leu Asn Gln 20 25 30

Pro Glu Ala Ile Ala Tyr Ile Ser Ala His Ile Met Asp Glu Ala Arg 35 40 45

Arg Gly Lys Lys Thr Val Ala Glu Leu Met Glu Glu Cys Met His Phe
50 55 60

Leu Lys Lys Asp Glu Val Met Pro Gly Val Gly Asn Met Val Pro Asp 65 70 75 80

Leu Gly Val Glu Ala Thr Phe Pro Asp Gly Thr Lys Leu Val Thr Val

Asn Trp Pro Ile Glu Pro Asp Glu His Phe Lys Ala Gly Glu Val Lys 100 105 110

Phe Gly Cys Asp Lys Asp Ile Glu Leu Asn Ala Gly Lys Glu Val Thr 115 120 125

Glu Leu Glu Val Thr Asn Glu Gly Pro Lys Ser Leu His Val Gly Ser 130 135 140

His Phe His Phe Phe Glu Ala Asn Lys Ala Leu Lys Phe Asp Arg Glu

Lys Ala Tyr Gly Lys Arg Leu Asp Ile Pro Ser Gly Asn Thr Leu Arg 165 170 175

Ile Gly Ala Gly Gln Thr Arg Lys Val Gln Leu Ile Pro Leu Gly Gly
180 185 190

Ser Lys Lys Val Ile Gly Met Asn Gly Leu Val Asn Asn Ile Ala Asp 195 200 205

Glu Arg His Lys His Lys Ala Leu Glu Lys Ala Lys Ser His Gly Phe 210 215 220

Ile Lys

225

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His Asp Tyr Thr Thr Tyr Gly Glu Glu Leu Lys Phe Gly Ala Gly Lys 35 40 45

Thr Ile Arg Glu Gly Met Gly Gln Ser Asn Ser Pro Asp Glu Asn Thr 50 55 60

Leu Asp Leu Val Ile Thr Asn Ala Met Ile Ile Asp Tyr Thr Gly Ile 65 70 75 80

Tyr Lys Ala Asp Ile Gly Ile Lys Asn Gly Lys Ile His Gly Ile Gly

85
90
95

Lys Ala Gly Asn Lys Asp Met Gln Asp Gly Val Ser Pro His Met Val

Val Gly Val Gly Thr Glu Ala Leu Ala Gly Glu Gly Met Ile Ile Thr 115 120 125

Ala Gly Gly Ile Asp Ser His Thr His Phe Leu Ser Pro Gln Gln Phe 130 135 140

Pro Thr Ala Leu Ala Asn Gly Val Thr Thr Met Phe Gly Gly Gly Thr 145 150 155 160

Gly Pro Val Asp Gly Thr Asn Ala Thr Thr Ile Thr Pro Gly Lys Trp 165 170 175

Asn Leu His Arg Met Leu Arg Ala Ala Glu Glu Tyr Ser Met Asn Val 180 185 190

Gly Phe Leu Gly Lys Gly Asn Ser Ser Ser Lys Lys Gln Leu Val Glu 195 200 205

Gln Ile Glu Ala Gly Ala Ile Gly Phe Lys Leu His Glu Asp Trp Gly 210 215 220

Thr Thr Pro Ser Ala Ile Asp His Cys Leu Ser Val Ala Asp Glu Tyr 225 230 235 240

Asp Val Gln Val Cys Ile His Thr Asp Thr Val Asn Glu Ala Gly Tyr
245 250 255

Val Asp Asp Thr Leu Asn Ala Met Asn Gly Arg Ala Ile His Ala Tyr
260 265 270

His Ile Glu Gly Ala Gly Gly His Ser Pro Asp Val Ile Thr Met

| Ala | Gly 290 | Ģlu | Leu | Asn | Ile | Leu 295 | Pro | Ser | Ser | Thr | Thr 300 | Pro | Thr | Ile | Pro |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Tyr 305 | Thr | Ile | Asn | Thr | Val 310 | Ála | Glu | His | Leu | Asp 315 | Met | Leu | Met | Thr | Cys 320 |
| His | His | Leu | Asp | Lys 325 | Arg | Ile | Arg | Glu | Asp 330 | Leu | Gln | Phe | Ser | Gln 335 | Ser |
| Arg | Ile | Arg | Pro 340 | Gly | Ser | Ile | Ala | Ala 345 | Glu | Asp | Val | Leu | His 350 | Asp | Ile |
| Gly | Val | Ile 355 | Ala | Met | Thr | Ser | Ser 360 | Asp | Ser | Gln | Ala | Met 365 | Gly | Arg | Ala |
| Gly | Glu 370 | Val | Ile | Pro | Arg | Thr 375 | Trp | Gln | Thr | Ala | Asp 380 | Lys | Asn | Lys | Lys |
| Glu 385 | Phe | Gly | Lys | Leu | Pro 390 | Glu | Asp | Ser | Ala | Asp 395 | Asn | Asp | Asn | Phe | Arg 400 |
| Ile | Lys | Arg | Tyr | Ile 405 | Ser | Lys | Tyr | Thr | Ile 410 | Asn | Pro | Ala | Leu | Thr 415 | His |
| Gly | Val | Ser | Glu 420 | Tyr | Ile | Gly | Ser | Val 425 | Glu | Glu | Gly | Lys | Ile 430 | Ala | Asp |
| Leu | Val | Val 435 | Trp | Asn | Pro | Ala | Phe 440 | Phe | Gly | Val | Lys | Pro 445 | Lys | Ile | Val |
| Ile | Lys 450 | Gly | Gly | Met | Val | Val 455 | Phe | Ser | Glu | Met | Gly 460 | Asp | Ser | Asn | Ala |
| Ser 465 | Val | Pro | Thr | Pro | Gln 470 | Pro | Val | Tyr | Tyr | Arg 475 | Glu | Met | Phe | Gly | His 480 |

His Gly Lys Ala Lys Phe Asp Thr Ser Ile Thr Phe Val Ser Lys Val 485 490 495

Ala Tyr Glu Asn Gly Val Lys Glu Lys Leu Gly Leu Glu Arg Lys Val
500 505 510

Leu Pro Val Lys Asn Cys Arg Asn Ile Thr Lys Lys Asp Phe Lys Phe 515 520 525

Asn Asn Lys Thr Ala His Ile Thr Val Asp Pro Lys Thr Phe Glu Val 530 535 540

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Val Lys Leu

| aca | ccc | aaa | gag | caa | gaa | aag | ttc | ttg | tta | tat | tat | gcg | ggc | gaa | gtg | 104 |
|-----|-----|-------|-------|-----|-----|-------|-----|-------|-----|-----|-------|-------|-----|-------|-------|-----|
| ľhr | Pro | Lys | Glu | Gln | Glu | Lys | Phe | Leu | Leu | Tyr | Tyr | Ala | Gly | Glu | Val | |
| | 5 | | | | | 10 | | | | | 15 | | | | | |
| | | • | | | | | | | | | | | | | | |
| | | | cgc | | | | | | | | | | | | | 152 |
| Ala | Arg | Lys | Arg | Lys | Ala | Glu | Gly | Leu | Lys | Leu | Asn | Gln | Pro | Glu | Ala | |
| 20 | | | | | 25 | | | | | 30 | | | | | 35 | |
| | | | | | | | | | | | | | | | | |
| att | gcc | tac | att | agt | gcc | cat | att | atg | gac | gag | gcg | cgt | cgt | ggc | aaa | 200 |
| Ile | Ala | Tyr | Ile | Ser | Ala | His | Ile | Met | Asp | Glu | Ala | Arg | Arg | Gly | Lys | |
| | | | | 40 | | | | | 45 | | | | | 50 | | |
| | | | | | | | | | | | | | | | | |
| aaa | acc | gtt | gcg | gaa | ctt | atg | gaa | gag | tgt | atg | cac | ttt | ttg | aaa | aaa | 248 |
| Lys | Thr | Val | Ala | Glu | Leu | Met | Glu | Glu | Cys | Met | His | Phe | Leu | Lys | Lys | |
| | | | 55 | | | | | 60 | | | | | 65 | | | |
| | | | | | | | | | | | | | | | | |
| gac | gag | gtg | atg | ccc | ggg | gtg | ggg | aat | atg | gtc | cct | gat | ttg | ggc | gtg | 296 |
| Asp | Glu | Val | Met | Pro | Gly | Val | Gly | Asn | Met | Val | Pro | Asp | Leu | Gly | Val | |
| | | 70 | | | | | 75 | | | | | 80 | | | | |
| | | | | | | | | | | | | | | | | |
| gaa | gcc | act | ttc | ccc | gat | ggc | acc | aaa | ctc | gta | act | gtg | aat | tgg | ccc | 344 |
| Glu | Ala | Thr | Phe | Pro | Asp | Gly | Thr | Lys | Leu | Val | Thr | Val | Asn | Trp | Pro | |
| | 85 | | | | | 90 | | | | | 95 | | | | | |
| | | | | | | | | | | - | | | | | | |
| atc | gaa | cct | gat | gaa | cac | ttt | aag | gcg | ggt | gaa | gtg | aaa | ttt | ggc | tgt | 392 |
| Ile | Glu | Pro | Asp | Glu | His | Phe | Lys | Ala | Gly | Glu | Val | Lys | Phe | Gly | Cys | |
| 100 | | | | | 105 | | | | | 110 | | | | | 115 | |
| | | | | | | | | | | | | | | | | |
| gat | aaa | gac | att | gaa | ctc | aac | gca | ggt | aag | gaa | gtt | acc | gaa | cta | gaa | 440 |
| Asp | Lys | Asp | Ile | Glu | Leu | Asn | Ala | Gly | Lys | Glu | Val | Thr | Glu | ı Leu | Glu | |
| | | | | 120 | | | | | 125 | | | | | 130 |) | |
| | | | | | | | | | | | | | | ٠ | | |
| gtt | act | aac | gaa | gga | cct | aaa | tcc | ttg | cat | gto | ggt | ago | cat | ttc | cac | 488 |
| Val | Thr | Asr | Glu | Gly | Pro | Lys | Ser | Leu | His | Val | . Gly | Ser | His | s Phe | His | |
| | | | 135 | | | | | 140 |) | | | | 145 | 5 | | |
| | | | | | | | | | | | | | | | | |
| ttc | ttt | gaa | a gcc | aac | aaa | gca | tto | aaa | ttc | gat | cgg | gaa | aaa | a gcc | tat | 536 |
| Phe | Phe | e Gli | ı Ala | Asn | Lys | . Ala | Let | . Lys | Phe | Asp | Arg | g Glu | Lys | s Ala | a Tyr | |

150

| | | | | | | | tct | | | | | | | | | 584 |
|--|--|---|---|--|--|--|---|--|---|---------------------------------|--|---|---|---------------------------------|--|-------------------|
| Gly | Lys | Arg | Leu | Asp | Ile | Pro | Ser | Gly | Asn | Thr | Leu | Arg | Ile | Gly | Ala | |
| | 165 | | | | , | 170 | | | | | 175 | | | | | |
| | | | | | , 3 | | | | | | | | | | | |
| gga | caa | acc | cgt | aaa | gtg | cag | tta | atc | cct | ctt | ggc | ggt | agt | aaa | aaa | 632 |
| Gly | Gln | Thr | Arg | Lys | Val | Gln | Leu | Ile | Pro | Leu | Gly | Gly | Ser | Lys | Lys | |
| 180 | | | | | 185 | | | | | 190 | | | | | 195 | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | cgc | | 680 |
| Val | Ile | Gly | Met | Asn | Gly | Leu | Val | Asn | Asn | Ile | Ala | Asp | Glu | Arg | His | |
| | | | | 200 | | | | | 205 | | | | | 210 | | |
| | | | | | | | | | | | | | | | | |
| aaa | cac | aaa | gcg | cta | gac | aaa | gca | aaa | tct | cac | gga | ttt | atc | aag | taa | 728 |
| Lys | His | Lys | Ala | Leu | Asp | Lys | Ala | Lys | Ser | His | Gly | Phe | Ile | Lys | | |
| | | | 215 | | | | | 220 | | | | | 225 | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| gga | gacto | | | | | | | | | | | | | tac (| | 777 |
| gga | gacto | | | | | | | | Glu`ʻ | Tyr ` | | | | Tyr | Gly | 777 |
| ggaq | gacto | | | Lys 1 | | | | | Glu`ʻ | | | | | Tyr | | 777 |
| | | | Met : | Lys l | Met : | Lys : | Lys (| Gln (| Glu`ʻ | Tyr ` 235 | Val : | Asn ' | Thr | Tyr (| Gly 240 | |
| ccc | acc | aca | Met : | Lys gat | Met 3 230 aaa | Lys : | Lys (| Gln (| Glu`' gga | Tyr ` 235 gat | Val acc | Asn gat | Thr ctt | Tyr (| Gly 240 gca | 777 825 |
| ccc | acc | aca | Met : | Lys gat | Met 3 230 aaa | Lys : | Lys (| Gln (| Glu`ʻ gga Gly | Tyr ` 235 gat | Val acc | Asn gat | Thr ctt | Tyr (tgg Trp | Gly 240 gca | |
| ccc | acc | aca | Met : | Lys gat | Met 3 230 aaa Lys | Lys : | Lys (| Gln (| Glu`' gga | Tyr ` 235 gat | Val acc | Asn gat | Thr ctt | Tyr (| Gly 240 gca | |
| ccc Pro | acc Thr | aca Thr | Met : ggc Gly | gat Asp 245 | Met 1 230 aaa Lys | Lys : gtg Val | Lys (cgc Arg | Gln (tta Leu | gga Gly 250 | Tyr ` 235 gat Asp | acc Thr | Asn gat Asp | Thr ctt Leu | tgg Trp 255 | Gly 240 gca Ala | 825 |
| ccc Pro gaa | acc Thr | aca Thr | ggc Gly | gat Asp 245 | Met 3 230 aaa Lys tat | gtg Val | cgc Arg | tta Leu tat | gga Gly 250 ggc | Tyr 1 235 gat Asp | acc Thr | gat Asp ctc | Thr ctt Leu aaa | tgg Trp 255 | Gly 240 gca Ala ggt | |
| ccc Pro gaa | acc Thr | aca Thr | ggc Gly | gat Asp 245 | Met 3 230 aaa Lys tat | gtg Val | cgc Arg | tta Leu tat Tyr | gga Gly 250 ggc Gly | Tyr 1 235 gat Asp | acc Thr | gat Asp ctc | ctt Leu aaa Lys | tgg Trp 255 ttc Phe | Gly 240 gca Ala | 825 |
| ccc Pro gaa | acc Thr | aca Thr | ggc Gly | gat Asp 245 gac Asp | Met 3 230 aaa Lys tat | gtg Val | cgc Arg | tta Leu tat | gga Gly 250 ggc Gly | Tyr 1 235 gat Asp | acc Thr | gat Asp ctc | Thr ctt Leu aaa | tgg Trp 255 ttc Phe | Gly 240 gca Ala ggt | 825 |
| ccc Pro gaa Glu | acc Thr gta Val | aca Thr gaa Glu | ggc Gly cat His | gat Asp 245 gac Asp | Met 3 230 aaa Lys tat Tyr | gtg Val acc | cgc Arg acc Thr | tta Leu tat Tyr 265 | gga Gly 250 ggc Gly | gat Asp gaa Glu | acc Thr gaa Glu | gat Asp ctc Leu | ctt Leu aaa Lys 270 | tgg Trp 255 ttc Phe | Gly 240 gca Ala ggt Gly | 825 873 |
| ccc Pro gaa Glu gca | acc Thr gta Val | aca Thr gaa Glu | ggc Gly cat His 260 | gat Asp 245 gac Asp | Met 3 230 aaa Lys tat Tyr | gtg Val acc Thr | cgc Arg acc Thr | tta Leu tat Tyr 265 | gga Gly 250 ggc Gly | gat Asp gaa Glu | acc Thr gaa Glu | gat Asp ctc Leu | ctt Leu aaa Lys 270 | tgg Trp 255 ttc Phe | gca Ala ggt Gly | 825 |
| ccc Pro gaa Glu gca | acc Thr gta Val | aca Thr gaa Glu aaa | ggc Gly cat His 260 | gat Asp 245 gac Asp | Met 3 230 aaa Lys tat Tyr | gtg Val acc Thr | cgc Arg acc Thr | tta Leu tat Tyr 265 atg | gga Gly 250 ggc Gly | gat Asp gaa Glu | acc Thr gaa Glu | gat Asp ctc Leu aat | ctt Leu aaa Lys 270 agc Ser | tgg Trp 255 ttc Phe | gca Ala ggt Gly | 825 873 |
| ccc Pro gaa Glu gca | acc Thr gta Val | aca Thr gaa Glu | ggc Gly cat His 260 | gat Asp 245 gac Asp | Met 3 230 aaa Lys tat Tyr | gtg Val acc Thr | cgc Arg acc Thr | tta Leu tat Tyr 265 atg | gga Gly 250 ggc Gly | gat Asp gaa Glu | acc Thr gaa Glu | gat Asp ctc Leu | ctt Leu aaa Lys 270 agc Ser | tgg Trp 255 ttc Phe | gca Ala ggt Gly | 825 873 |
| ccc Pro gaa Glu gca Ala | acc Thr gta Val ggt Gly | aca Thr gaa Glu aaa Lys 275 | ggc Gly cat His 260 act | gat Asp 245 gac Asp atc | Met 3 230 aaa Lys tat Tyr cgt Arg | gtg Val acc Thr gag Glu | cgc Arg acc Thr ggt Gly 280 | tta Leu tat Tyr 265 atg | gga Gly 250 ggc Gly ggt Gly | gat Asp gaa Glu cag | acc Thr gaa Glu agc | gat Asp ctc Leu aat Asn 285 | ctt Leu aaa Lys 270 agc Ser | tgg Trp 255 ttc Phe cca | Gly 240 gca Ala Gly ggt Gly gat Asp | 825 873 921 |
| ccc Pro gaa Glu gca Ala | acc Thr gta Val ggt Gly | aca Thr gaa Glu aaa Lys 275 | ggc Gly cat His 260 act Thr | gat Asp 245 gac Asp atc Ile | Met 3 230 aaa Lys tat Tyr cgt Arg | gtg Val acc Thr gag Glu | cgc Arg acc Thr ggt 280 | tta Leu tat Tyr 265 atg | gga Gly 250 ggc Gly ggt | gat Asp gaa Glu cag | acc Thr gaa Glu agc Ser | gat Asp ctc Leu aat Asn 285 | ctt Leu aaa Lys 270 agc Ser | tgg Trp 255 ttc Phe cca Pro | gca Ala ggt Gly gat Asp | 825 873 |
| ccc Pro gaa Glu gca Ala | acc Thr gta Val ggt Gly | aca Thr gaa Glu aaa Lys 275 acc | ggc Gly cat His 260 act Thr | gat Asp 245 gac Asp atc Ile | Met 3 230 aaa Lys tat Tyr cgt Arg | gtg Val acc Thr gag Glu | cgc Arg acc Thr ggt 280 atc | tta Leu tat Tyr 265 atg | gga Gly 250 ggc Gly ggt | gat Asp gaa Glu cag | acc Thr gaa Glu agc Ser | gat Asp ctc Leu aat Asn 285 | ctt Leu aaa Lys 270 agc Ser | tgg Trp 255 ttc Phe cca | gca Ala ggt Gly gat Asp | 825 873 921 |

| acc · | ggg | att | tac | aaa | gcc | gac | att | ggc | att | aaa | aat | ggc | aaa | atc | cat | 1017 |
|-------|-------|------------|----------------|-------|---------|-----------|-------|-------|-------|-------|------------|-------|-------|-------|-------|------|
| hr | Gly | Ile | Tyr | Lys | Ala | Asp | Ile | Gly | Ile | Lys | Asn | Gly | Lys | Ile | His | |
| 305 | - | | | | 310 | | | | | 315 | | | | | 320 | |
| | | • | | | | | | | | | | | | | | |
| aac | att | ggc | aag | gca | gga | aac | aag | gac | atg | caa | gat | ggc | gta | agc | cct | 1065 |
| Glv | Ile | Gly | Lys | Ala | Gly | Asn | Lys | Asp | Met | Gln | Asp | Gly | Val | Ser | Pro | |
| -1 | | - | - | 325 | | | | | 330 | | | | | 335 | | |
| | | | | | | | | | | | | | | | | |
| cat | atα | atc | ata | ggt | gtg | ggc | aca | gaa | gca | cta | gca | ggg | gaa | ggt | atg | 1113 |
| His | Met | Val | Val | Gly | Val | Gly | Thr | Glu | Ala | Leu | Ala | Gly | Glu | Gly | Met | |
| | | | 340 | - | | | | 345 | | | | | 350 | | | |
| | | | | | | | | | | | | | | | | |
| att | att | acc | act | aaa | aaa | atc | gat | tca | cac | acc | cac | ttc | ctc | tct | cca | 1161 |
| Tla | Tle | Thr | Ala | Glv | Glv | Ile | Asp | Ser | His | Thr | His | Phe | Leu | Ser | Pro | |
| 110 | 110 | 355 | | 1 | • | | 360 | | | | | 365 | | | | |
| | | 550 | | | | | | | | | | | | | | |
| C22 | caa | ttc | cct | acc | act | cta | qcc | aat | ggc | gtt | aca | aca | atg | ttt | ggc | 1209 |
| Cla | Cln | Dha | Pro | Thr | Ala | Leu | Ala | Asn | Gly | Val | Thr | Thr | Met | Phe | Gly | |
| GTII | 370 | | 110 | 1111 | | 375 | | | - | | 380 | | | | | |
| | 310 | | | | | | | | | | | | | | | |
| ~~+ | aac | 202 | aac | | ata | gat | aac | acq | aat | gcg | act | acc | ato | act | ccg | 1257 |
| Clu | Glu | aca Thr | . 990 . Glv | , Dro | v Val | Asp | Glv | Thr | Asn | Ala | Thr | Thr | Ile | Thr | Pro | |
| 385 | Gry | 1111 | . U. y | | 390 | | - | | | 395 | | | | | 400 | |
| 202 | | | | | | | | | | | | | | | | |
| ~~~ | 222 | tac | 1 220 | • ttc | т сас | . cac | ato | tto | cqc | gca | gca | a gaa | gaç | tat | tct | 1305 |
| | | | | | | | | | | | | | | | Ser | |
| GIY | гуз | , TTF | , ASI | 405 | | , : | , | | 410 | | | | | 415 | | |
| | | | | 100 | , | | | | | | | | | | | |
| ato | | · ata | י ממי | ~ ++i | t t.t.c | a aad | c aaa | a ggo | c aat | ago | c tot | t agt | aaa | a aaa | a caa | 1353 |
| | | | | | | | | | | | | | | | s Gln | |
| Met | . ASI | ı va. | 42 | | | | | 425 | | | | | 430 | | | |
| | | | 72 | 0 | | | | | | | | | | | | |
| a++ | | . ~. | | 2 at | a (12) | a aca | ם ממנ | e ac | ati | t aat | t tti | t aaa | a tto | g ca | t gaa | 1401 |
| | | | | | | | | | | | | | | | s Glu | |
| ьег | ı va. | | | ı, va | . UI | · • • • • | 44 | | | | • | 44! | | | | |
| | | 43 | J | | | | 2.3 | - | | | | | | | | |
| ~~ | . +~ | ~ ~~ | c | 2 20 | t cc | a a.c. | ר מכי | a at | c da | t ca | c ta | c tt | g aq | c at | a gca | 1449 |
| | | | | | | | | | | | | | | | l Ala | |
| AS |) II | h GT | λти | T 111 | TET | J 56 | - VT | | ٠,١٥ | | • <u>J</u> | | | | | |

| gat | gaa | tac | gat | gtg | caa | gtt | tgt | ata | cac | acc | gat | acg | gtc | aat | gag | 1497 |
|------|-------|----------|-------|--------|------------|-------|-------|-------|-------|-----------|-------|-------|-------|-------|-------|------|
| 7 cn | Glu | i Tur | Asp | Val | Gln | Val | Cys | Ile | His | Thr | Asp | Thr | Val | Asn | Glu | |
| | GIU | | 1101 | | 470 | | - | | | 475 | | | | | 480 | |
| 465 | | | • | | د ب د ب | = | | | | | | | | | | |
| | | | gta | ~~+ | ~ ~ ~ | 200 | cta | aat | αca | atα | aac | aaa | cqc | gcc | atc | 1545 |
| gca | ggt | tat - | Val | yac | na- | mb~ | Lou | Aen | Δla | Met | Asn | Glv | Ara | Ala | Ile | |
| Ala | GTĀ | Tyr | vaı | | ASP | 1111 | Бец | ASII | 490 | 1100 | | 3 | | 495 | | |
| | | | | 485 | | | | | 4 50 | | | | | | | |
| | | | cac | _ 4.4. | ~~~ | ~~? | aca | aat | aaa | aaa | cac | t.ca | cct | gat | qtt | 1593 |
| cat | gcc | tac | cac | att | gag | gga | gcg | 01 | Cliv | Clu | Hie | Ser | Pro | Asp | Val | |
| His | Ala | Tyr | His | Ile | GIu | GTĀ | Ата | | GIÀ | Gry | 1113 | DCI | 510 | пор | | |
| | | | 500 | | | | | 505 | | | | | 510 | | | |
| | | | | | | | + | a++ | at a | ccc | tcc | tcc | aca | acc | cct | 1641 |
| atc | acc | atg | gca | ggc | gaa | gtg | aat | 71- | Ton | D~0 | Sar | Ser | Thr | Thr | Pro | |
| Ile | Thr | | Ala | Gly | Glu | vaı | | TTE | пеп | FIO | 561 | 525 | | | Pro | |
| | | 515 | | | | | 520 | | | | | 323 | | | | |
| | | | | | | | | | | ~ | 020 | ++> | a a c | ato | ctt | 1689 |
| act | atc | ccc | tat | acc | att | aat | acg | gtt | gca | yaa ci | uio | Tou | 7 cn | Mot | ctt | |
| Thr | Ile | Pro | Tyr | Thr | Ile | | Thr | Val | Ala | GIU | | | АЗР | nec | Leu | |
| | 530 | | | | | 535 | | | | | 540 | | | | | |
| | | • | | | | | | | | | | | a+ a | | . +++ | 1737 |
| atg | acc | tgo | cac | cac | cta | gat | aaa | cgc | atc | cgc | gaç | gat | Tan | Cae | a ttt | 1737 |
| Met | Thr | Cys | His | His | Leu | Asp | Lys | Arg | ΙŢΕ | | | ı Asp | ь тег | GII | n Phe | |
| 545 | | | | | 550 | | | | | 555 |) | | | | 560 | |
| | | | | | | | | | | | | | | | | 1705 |
| tct | caa | ago | cgt: | ato | cgc | ccc | ggc | tct | ato | gcc | gct | gaa | gat | : gtq | g ctc | 1785 |
| Ser | Glr | Ser | : Arg | Ile | Arg | Pro | Gly | Ser | Ile | Ala | a Ala | a Glu | ı Asp | | l Leu | |
| | | | | 565 | • | | | | 570 |) | | | | 579 | 5 | |
| | | | | | | | | | | | | | | | | |
| cat | gat | ato | ggt | gto | g atc | gcg | g ato | g aca | a agt | tc | c gai | tc | g caa | a gc | a atg | 1833 |
| His | s Asp | o Ile | e Gly | / Val | Ile | ala | a Met | Thi | Ser | Sei | r Ası | Sei | c Gli | n Al | a Met | |
| | | | 580 |) | | | | 585 | 5 | | | | 59 |) | | |
| | | | | | | | | | | | | | | | | |
| ggg | g cgo | e ge | t ggg | g gaa | gte | g att | c cct | aga | a act | t tg | g ca | a act | t gc | a ga | c aag | 1881 |
| Gl | y Ar | a Ala | a Gl | y Glı | ן Val | l Ile | e Pro | Arq | g Thi | r Trj | p Gl | n Th | r Al | a As | p Lys | |
| - | - | 59 | | - | | | 600 | | | | | 60 | | | | |
| | | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | | | | | , | |
|---|-----|-------|-------|-------|---------|-------|-------|-------|-------|-----------|-------|-------|-------|-------|--------------|-------|------|---|---|----|
| · | | | | gaa | | | | | | | | | | | | | 1929 | | | |
| | Asn | Lys | Lys | Glu | Phe | Gly | Lys | Leu | Pro | Glu | Asp | Gly | Ala | Asp | Asn | Asp | | | | |
| | | 610 | | | | | 615 | | | | | 620 | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | aac | ttc | cgc | atc | aaa | cgc | tat | atc | tcc | aaa | tac | acc | att | aat | ccc | gct | 1977 | | | |
| | Asn | Phe | Arg | Ile | Lys | Arg | Tyr | Ile | Ser | Lys | Tyr | Thr | Ile | Asn | Pro | Ala | | | | |
| | 625 | | | | | 630 | | | | | 635 | | | | | 640 | | | | |
| | | | | | - | | | | | | | | | | | | | | | |
| | ttg | acc | cat | ggc | gtg | agc | gag | tat | atc | ggc | tct | gtg | gaa | gag | ggc | aag | 2025 | | | |
| | Leu | Thr | His | Gly | Val | Ser | Glu | Tyr | Ile | Gly | Ser | Val | Glu | Glu | Gly | Lys | | | | |
| | | | | | 645 | | | | | 650 | | | | | 655 | | | | | ٠. |
| | | | | | | | | | | | | | | | | | | | | |
| | atc | acc | gac | ttg | gtg | gtg | tgg | aat | cct | gcc | ttt | ttt | ggc | gta | aaa | ccc | 2073 | | | |
| | | | | Leu | | | | | | | | | | | | | | | | |
| | | | - | 660 | | | | | 665 | | | | | 670 | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | 222 | atc | ata | atc | aaa | aac | ggt | atg | gtg | gtg | ttc | tct | gaa | atg | ggc | gat | 2121 | | | |
| | | | | Ile | | | | | | | | | | | | | | | | |
| | пуз | 110 | 675 | | -1- | 2 | - | 680 | | | | | 685 | | | | ; | | | |
| | | | 0.0 | | | | | | | | | | | | | | | | | |
| | tot | aat | aca | tct | at.a | ccc | act | cct | cag | ccg | gtt | tat | tac | cgc | gaa | atg | 2169 | , | | |
| | | | | | | | | | | | | | | | | Met | | | | |
| | 261 | 690 | | 001 | | | 695 | | | | | 700 | | | | | | | | |
| | | 090 | ' | | | | | | | . • | • | | | | | | 1 | | | |
| | +++ | ~~~ | cat | Cac | ממכ | aad | aca | aaa | ttt | gac | acc | ago | ato | act | ttt | gtt | 2217 | | | |
| | Dha | . ggg | , uic | . Cac | Glv | Lvs | Ala | Lvs | Phe | Asp | Thr | Ser | Ile | Thr | Phe | e Val | | | - | |
| | | | / пте | nis | GLY | 710 | | 2,2 | | r | 715 | | | | | 720 | | | | |
| | 705 |) | | | | , 10 | | | | | | | | | | | | | | |
| | | | | . ~~ | . + > + | ~~= | aat | aat | ata | ааа | gaa | aaa | cta | ı aat | tta | a gag | 2265 | | | |
| | | | | | | | | | | | | | | | | ı Glu | | | | |
| | Sei | : гу | s val | Ala | | | , non | . 017 | ,,,, | 730 | | 1 | | | 735 | | | | | |
| | | | | | 725 |) | | | | , 50 | | | | | | | | | | |
| | | | | | | . ~+~ | | | . +ac | cat | . aac | · ato | acc | aac | r aad | g gac | 2313 | | | |
| | | | | | | | | | | | | | | | | | 5020 | | | |
| | Ar | g Lys | s Va. | | |) val | груг | , ASI | 745 | | , ASI | | | 750 | | s Asp | | | | |
| | | | | 740 | j | | | | 740 | , | | | | , 50 | , | | | | | |
| | | | | | | | | | | <u></u> . | | , | | - 00 | , , , | 200 | 2361 | | | |
| | | | | | | | | | | | | | | | | a acc | 2301 | | | |
| | Ph | e Ly | s Pho | e Asr | n Asp | o Lys | s Thi | c Ala | a Lys | 3 116 | Thi | va. | L AS] | rr(ب | о г∙Й. | s Thr | | | | |
| | | | | | | | | | | | | | | | | | | | | |

4.

ttc gag- gtc ttt gta gat ggc aaa ctc tgc acc tct aaa ccc acc tct 2409

Phe Glu Val Phe Val Asp Gly Lys Leu Cys Thr Ser Lys Pro Thr Ser

770 780

765

gaa gtg cct cta gcc caa cgc tac act ttc ttc tag gcataat 2452
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Gly Glu Val Ala Arg Lys Arg Lys Ala Glu Gly Leu Lys Leu Asn Gln
20 25 30

Pro Glu Ala Ile Ala Tyr Ile Ser Ala His Ile Met Asp Glu Ala Arg 35 40 45

Arg Gly Lys Lys Thr Val Ala Glu Leu Met Glu Glu Cys Met His Phe 50 55 60

Leu Lys Lys Asp Glu Val Met Pro Gly Val Gly Asn Met Val Pro Asp 65 70 75 80

Leu Gly Val Glu Ala Thr Phe Pro Asp Gly Thr Lys Leu Val Thr Val

Asn Trp Pro Ile Glu Pro Asp Glu His Phe Lys Ala Gly Glu Val Lys
100 105 . 110

Phe Gly Cys Asp Lys Asp Ile Glu Leu Asn Ala Gly Lys Glu Val Thr 115 120 125

Glu Leu Glu Val Thr Asn Glu Gly Pro Lys Ser Leu His Val Gly Ser 130 135 140

His Phe His Phe Phe Glu Ala Asn Lys Ala Leu Lys Phe Asp Arg Glu 145 150 155 160

Lys Ala Tyr Gly Lys Arg Leu Asp Ile Pro Ser Gly Asn Thr Leu Arg 165 170 175

Ile Gly Ala Gly Gln Thr Arg Lys Val Gln Leu Ile Pro Leu Gly Gly
180 185 190

Ser Lys Lys Val Ile Gly Met Asn Gly Leu Val Asn Asn Ile Ala Asp 195 200 205

Glu Arg His Lys His Lys Ala Leu Asp Lys Ala Lys Ser His Gly Phe 210 215 220

Ile Lys

225

<210> 15

<211> 568

<212> PRT

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Gly Asp Lys Val Arg Leu Gly Asp Thr Asp Leu Trp Ala Glu Val Glu 20 25 30

His Asp Tyr Thr Thr Tyr Gly Glu Glu Leu Lys Phe Gly Ala Gly Lys

| Thr | Ile 50 | Arg | Glu | Gly | Met | Gly 55 | Gln | Ser | Asn | Ser | Pro 60 | Asp | Glu | Asn | Thr |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Leu 65 | Asp | Leu | Val | Ile | Thr 70 | Asn | Ala | Met | Ile | Ile 75 | Asp | Tyr | Thr | Gly | Ile 80 |
| Tyr | Lys | Ala | Asp | Ile 85 | Gly | Ile | Lys | Asn | Gly 90 | Lys | Ile | His | Gly | Ile 95 | Gly |
| Lys | Ala | Gly | Asn 100 | Lys | Asp | Met | Gln | Asp 105 | Gly | Val | Ser | Pro | His 110 | Met | Val |
| Val | Gly | Val 115 | Gly | Thr | Glu | Ala | Leu 120 | Ala | Gly | Glu | Gly | Met 125 | Ile | Ile | Thr |
| Ala | Gly 130 | Gly | Ile | Asp | Ser | His 135 | Thr | His | Phe | Leu | Ser 140 | Pro | Gln | Gln | Phe |
| Pro 145 | Thr | Ala · | Leu | Ala | Asn 150 | Gly | Val | Thr | Thr | Met 155 | Phe | Gly | Gly | Gly | Thr 160 |
| Gly | Pro | Val | Asp | Gly 165 | Thr | Asn | Ala | Thr | Thr 170 | Ile | Thr | Pro | Gly | Lys 175 | Trp |
| Asn | Leu | His | Arg 180 | Met | Leu | Arg | Ala | Ala 185 | Glu | Glu | Tyr | Ser | Met 190 | Asn | Val |
| Gly | Phe | Leu 195 | Gly | Lys | Gly | Asn | Ser 200 | Ser | Ser | Lys | Lys | Gln 205 | Leu | Val | Glu |
| Gln | Val 210 | | Ala | Gly | Ala | Ile 215 | Gly | Phe | Lys | Leu | His 220 | Glu | Asp | Trp | Gly |
| Thr | Thr | Pro | Ser | Ala | Ile | Asp | His | Cys | Leu | Ser | Val | Ala | Asp | Glu | Tyr |

- Val Asp Asp Thr Leu Asn Ala Met Asn Gly Arg Ala Ile His Ala Tyr
 260 265 270
- His Ile Glu Gly Ala Gly Gly Gly His Ser Pro Asp Val Ile Thr Met 275 280 285
- Ala Gly Glu Val Asn Ile Leu Pro Ser Ser Thr Thr Pro Thr Ile Pro 290 295 300
- Tyr Thr Ile Asn Thr Val Ala Glu His Leu Asp Met Leu Met Thr Cys 305 310 315 320
- His His Leu Asp Lys Arg Ile Arg Glu Asp Leu Gln Phe Ser Gln Ser 325 330 335
- Arg Ile Arg Pro Gly Ser Ile Ala Ala Glu Asp Val Leu His Asp Ile 340 345 350
- Gly Val İle Ala Met Thr Ser Ser Asp Ser Gln Ala Met Gly Arg Ala 355 360 365
- Gly Glu Val Ile Pro Arg Thr Trp Gln Thr Ala Asp Lys Asn Lys Lys 370 375 380
- Glu Phe Gly Lys Leu Pro Glu Asp Gly Ala Asp Asn Asp Asn Phe Arg 385 390 395 400
- Ile Lys Arg Tyr Ile Ser Lys Tyr Thr Ile Asn Pro Ala Leu Thr His
 405 410 415
- Gly Val Ser Glu Tyr Ile Gly Ser Val Glu Glu Gly Lys Ile Ala Asp 420 425 430
- Leu Val Val Trp Asn Pro Ala Phe Phe Gly Val Lys Pro Lys Ile Val
 435 440 445

Ile Lys Gly Gly Met Val Val Phe Ser Glu Met Gly Asp Ser Asn Ala 450 . 455

Ser Val Pro Thr Pro Gln Pro Val Tyr Tyr Arg Glu Met Phe Gly His 465 470 475 480

His Gly Lys Ala Lys Phe Asp Thr Ser Ile Thr Phe Val Ser Lys Val 485 490 495

Ala Tyr Glu Asn Gly Val Lys Glu Lys Leu Gly Leu Glu Arg Lys Val 500 505 510

Leu Pro Val Lys Asn Cys Arg Asn Ile Thr Lys Lys Asp Phe Lys Phe 515 520 525

Asn Asp Lys Thr Ala Lys Ile Thr Val Asp Pro Lys Thr Phe Glu Val 530 535 540

Phe Val Asp Gly Lys Leu Cys Thr Ser Lys Pro Thr Ser Glu Val Pro 545 550 555 555 560

Leu Ala Gln Arg Tyr Thr Phe Phe 565

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<400> 16

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21

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| <212> DNA | |
|-------------------------------------|----|
| <213> Helicobacter felis | |
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| <400> 17 | 16 |
| tatggtggtc ttctct | 10 |
| | |
| <210> 18 | |
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| | |
| <400> 18 | 32 |
| ggagtaacat atgaaactca cacccaaaga gc | 32 |
| | |
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